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PROCEEDINGS

OF THE

American Pharmaceutical Association

AT ITS

TWELFTH ANNUAL MEETING,

HELD IN

CINCINNATI, O.,

SEPTEMBER, 1864.

ALSO, THE REVISED

CONSTITUTION AND ROLL OF MEMBERS.

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PHILADELPHIA:
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1864

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1864–65.

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2d. ENNO SANDER,	St. Louis, Mo.
3d. THOMAS HOLLIS,	Boston, Mass.

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E. R. SQUIBB, *Chairman*,	Brooklyn, N. Y.
WM. PROCTER, JR.,	Philadelphia, Pa.
ALFRED B. TAYLOR,	Philadelphia, Pa.

List of Officers of the Association

SINCE ITS ORGANIZATION.

PRESIDENTS.

Daniel B. Smith,	Philadelphia,	1852–53
William A. Brewer,	Boston,	1853–54
William B. Chapman,	Cincinnati,	1854–55
John Meakim,	New York,	1855–56
George W. Andrews,	Baltimore,	1856–57
Charles Ellis,	Philadelphia,	1857–58
John L. Kidwell,	Georgetown, D. C.,	1858–59
Samuel M. Colcord,	Boston,	1859–60
Henry T. Kiersted,	New York,	1860–62
William Procter, Jr.,	Philadelphia,	1862–63
J. Faris Moore,	Baltimore,	1863–64
Wm. J. M. Gordon,	Cincinnati,	1864–65

FIRST VICE-PRESIDENTS.

George W. Andrews,	Baltimore,	1852–53
George D. Coggeshall,	New York,	1853–54
Henry T. Cummings,	Portland, Me.,	1854–55
C. B. Guthrie,	Memphis, Tenn.,	1855–56
John L. Kidwell.	Washington, D. C.,	1856–57
James Cooke,	Fredericksburg, Va.,	1857–58
Edward R. Squibb,	Brooklyn, N. Y.,	1858–59
William Procter, Jr.,	Philadelphia,	1859–60
William J. M. Gordon,	Cincinnati,	1860–62
John Milhau,	New York,	1862–63
John M. Maisch,	Philadelphia,	1863–64
Richard H. Stabler,	Alexandria, Va.,	1864–65

SECOND VICE-PRESIDENTS.

Samuel M. Colcord.	Boston,	1852–53
Alexander Duval,	Richmond, Va.,	1853–54
John Meakim,	New York,	1854–55
Charles Ellis,	Philadelphia,	1855–56
Frederick Stearns,	Detroit, Mich.,	1856–57
S. P. Peck,	Bennnigton, Vt.,	1857–58
James O'Gallagher,.	St. Louis, Mo.,	1858–59
Joseph Roberts,	Baltimore,	1859–60
William S. Thompson,	Baltimore,	1860–62
Eugene L. Massot,	St. Louis, Mo.,	1862–63
Charles A. Tufts,	Dover, N. H.,	1863–64
Enno Sander,	St. Louis, Mo.,	1864–65

THIRD VICE-PRESIDENTS.

C. Augustus Smith,	Cincinnati,	1852–53
C. B. Guthrie,	Memphis Tenn.,	1853–54
Joseph Laidley,	Richmond, Va.,	1854–55
H. F. Fish,	Waterbury, Ct.,	1855–56
H. T. Kiersted,	New York,	1856–57
A. E. Richards,	Plaquemine, La.,	1857–58
R. Battey,	Rome, Ga.,	1858–59
Edwin O. Gale,	Chicago, Ill.,	1859–60
Theodore Metcalf,	Boston,	1860–62
J. Faris Moore,	Baltimore,	1862–63
George W. Weyman,	Pittsburg, Pa.,	1863–64
Thomas Hollis,	Boston,	1864–65

TREASURERS.

Alfred B. Taylor,	Philadelphia,	1852–54
S. M. Colcord,	Boston,	1854–56
J. S. Aspinwall,	New York,	1856–57
S. M. Colcord,	Boston,	1857–59
Ashel Boyden,	Boston,	1859–60
Henry Haviland,	New York,	1860–63
J. B. Baxley,	Baltimore,	1863–65

RECORDING SECRETARIES.

Geo. D. Coggeshall,	New York,	1852–53
Edward Parrish,	Philadelphia,	1853–54
Edward S. Wayne,	Cincinnati,	1854–55
W J. M. Gordon,	Cincinnati,	1855–59
Charles Bullock,	Philadelphia,	1859–60
James T. Shinn,	Philadelphia,	1860–62
P. W. Bedford,	New York,	1862–63
William Evans, Jr.,	Philadelphia,	1863–64
H. N. Rittenhouse,	Philadelphia,	1864–65

CORRESPONDING SECRETARIES.

William Procter, Jr.,	Philadelphia,	1852–53
William B. Chapman,	Cincinnati,	1853–54
William Procter, Jr.,	Philadelphia,	1854–57
Edward Parrish,	Philadelphia,	1857–58
Ambrose Smith,	Philadelphia,	1858–59
William Hegeman,	New York,	1859–60
P. W. Bedford,	New York,	1860–62
John M. Maisch,	Philadelphia,	1862–63
P. W. Bedford,	New York,	1863–65

CONTENTS.

Prefatory Note.. 13
MINUTES OF THE TWELFTH ANNUAL MEETING.................... 17
Delegates from Pharmaceutical Colleges................ 17, 28, 47
Members elected.. 18, 19, 29
Members in attendance......... .... 19, 28
Report of Executive Committee.................................. 19
President's Address.. 26
Election of Officers 29, 35
Amendments to the Constitution......................... 30, 42, 44
Treasurer's Report.. 31
Report of Committee on Membership, &c....................... 34
Report of Auditing Committee.................................... 35
Special Reports read....................................... 35, 42, 47
Invitations to the Association........................... 40, 44, 46
Vote on the Time and Place of the 13th Meeting.............. 40
Withholding of Proceedings from delinquent Members... 40, 46
Committee to report all arrearages.............................. 41
Expulsion of Members in arrears............................ 41, 46
Committees on the Drug Market, on Queries, and the Business Committee, to be Standing Committees.................. 41, 44
Insurance of the property of the Association..................... 41
Returning Unsold Proceedings.................................... 41
Committee on a new form of Certificate.......................... 42
Volunteer Papers, and Committee to examine the same........ 49
Report of Committee on Queries.................................. 49
Votes of Thanks.. 52, 53
Announcement of Committees...................................... 53
Resolution at Longview Asylum.................................... 53
Report of Committee on Volunteer Papers......................... 54

Reports of Committees.

Report on the Progress of Pharmacy........ 56
  Recent Publications........ 61
  Classification........ 69
  Practical Pharmacy........ 70
  Materia Medica........ 95
    Vegetable Drugs........ 95
    Animal Drugs........ 116
    Minerals........ 118
    Medicinal Chemicals........ 120
  Chemistry........ 130
    Inorganic Chemistry........ 130
    Organic Chemistry........ 151
    Physiological and Pathological Chemistry........ 168
    Vegetable and Agricultural Chemistry........ 172
    Analytical Chemistry........ 174
Report of the Corresponding Secretary........ 182
Report on the Drug Market........ 187

Special Reports and Essays.

On Preparations of Cinchona. By Alfred B. Taylor........ 206
On the Extraction and Preservation of Lard. By H. W. Lincoln... 208
On the Solubility of Camphor in Water. By G. F. H. Markoe... 212
On the Aqueous Extract of Jalap. By A. B. Taylor........ 215
The Pharmaceutist as a Merchant. By Fred. Stearns........ 216
On the Sweet Gum Tree, (Liquidambar styraciflua). By Wm. Procter, Jr........ 222
On Tobacco. By Ferd. F. Mayer........ 223
Preparation and Dispensing of Plasters. By Wm. C. Bakes........ 230
Bitter Wine of Iron. By James T. Shinn........ 234
Glycerin—its Mission (so to speak), &c. By W. J. M. Gordon... 237
On Spatulas, Stirring Rods, &c. By Thos. S. Wiegand........ 241
On a Test for the Resin of Cannabis Indica. By Wm. Procter, Jr.... 244
On Pyrethrum roseum. By George F. H. Markoe........ 248
The Press. By R. H. Stabler........ 249
On the Odor of Commercial Tannic Acid. By Wm. Procter, Jr.... 255
On the Preservation of Garlic. By A. P. Sharp........ 256
On a Brandy Substitute. By Edward Parrish........ 257
On Capsicum. By Edward Parrish........ 262
Remarks on Dialysis. By Wm. Procter, Jr........ 264
On Southern Prickly Ash Bark. By Prof. Robt. Bridges........ 270

Volunteer Reports and Essays.

A Systematic Course of Study and Manipulation for Students of Pharmacy. By Edward Parrish.......... 273

On the Assay of French Brandy and Whisky. By John M. Maisch.......... 291

On the Quality of Sherry Wine of our Commerce, and its Assay. By John M. Maisch.......... 296

On some Medicinal Spirits. By John M. Maish.......... 303

Practical Observations on the Manufacture of Oleum Æthereum. By C. L. Diehl, Jr.......... 309

Plan and Description of Balance for Apothecaries' uses. By T. S. Wiegand.......... 316

Description of a new Balance for use without Weights. By E. Parrish.......... 318

Appendix.

Constitution.......... 321

Form of Application for Membership.......... 325

Roll of Members.......... 327

Alphabetical Index of Contents.......... 345

PREFATORY NOTE.

To the Members of the American Pharmaceutical Association:—

The Executive Committee herewith present the twelfth volume of the annual Proceedings of the American Pharmaceutical Association, comprising the transactions of the second meeting held in the Western States.

Immediately after their appointment, your Committee commenced to make full arrangements to publish this volume with as much dispatch as possible. An unlooked-for delay in the transmission of the documents, the requisite arrangements for producing the illustrations, the forwarding of proof sheets to distant cities, all this consumed more time than was calculated for at the outset. But the experience gained, has satisfied your Committee that it is impossible to have a volume of about three hundred and fifty pages published in the short space of four weeks after the adjournment of the meeting, as was suggested some years ago. Nevertheless, they acknowledge the belief that the publication of the annual Proceedings may be effected in a shorter time if it is permanently entrusted to competent hands, and we would therefore invite your special attention to the proposition for amending the Constitution, which will be found on page 30, of the present volume, and on which action will be taken at the first session of the next annual meeting.

Of the reports of Committees, that of the Committee on the Progress of Pharmacy is complete and well digested, and cannot fail to prove useful and instructive; the scientific classification adopted for some years past, has, in its main features been adhered to; and if continued hereafter, will exhibit the researches, discoveries, and improvements, in all the branches of the pharmaceutic art in a systematic form, and will prove to be a material aid to investigators and students.

The number of special reports and volunteer papers exceed that of any previous volume; and though but few lengthy essays have been presented for publication, the subjects treated of, the manner of investigation, and the results attained, are, on the whole, highly satisfactory, and nearly all the papers deserve the close attention and careful perusal of the profession.

Your Committee have noticed that many errors had been allowed to gradually creep into the Roll of Members. In their endeavor to correct them, they have found it necessary to go over the Minutes of all the meetings of the Association from 1853, to the present time; the labor which it has cost, we hope, has enabled us to produce the roll nearly if not entirely free from mistakes.

In connection with this examination, the Committee have noticed that a number of members elected in different years, have never signed the Constitution. All these members have been duly notified by us, calling their attention to Article II. Section 3 of the Constitution, and were requested to send the Constitution, properly signed, to the Chairman. This request has not been responded to by all, and the Executive Committee have thereupon come to the conclusion, that they cannot be considered *bona fide* members, and consequently have no right to share in the privileges of members in good standing. They will be again notified, and if not complying with the requirements of the Constitution, their names will be reported to the next Annual Meeting of the Association.

Many members—such who have signed, and such who have not signed the Constitution—have allowed their dues to run up to a considerable sum; some to eight and nine annual contributions; the dues of those *three years and more in arrears will amount to almost three thousand dollars,* a sum nearly sufficient to pay for the publication of three annual Proceedings. In view of this fact, and in accordance with Art. IV. Sec. 2, of the Constitution, according to which the Executive Committee *have charge of the revision of the roll*, they will withhold the present Proceedings from all delinquent members, who are *four years or more in arrears*, all of whom will be duly notified of the fact, until said arrearages have been paid up.

The Association at the last meeting granted a grace to those members who are three years in arrears, by reconsidering a resolution to withhold the Proceedings from them, as will be seen by referring to pages 40 and 46 of the present volume. However, a Committee of two has been appointed, consisting of Professor J. F. Moore and Mr. J. Brown Baxley of Baltimore, to report on all arrearages. (Page 41.) It is evident, that the resignation of no member is likely to be entertained until all his dues have been paid up. (Page 41.)

From the above statements, all members will perceive the necessity of responding promptly to the Treasurer's call for the payment of the annual dues. The advance in the price of paper, and of all the requisites to publish this volume in a style creditable to the Association, have enhanced the cost considerably, and will exhaust the Treasury, unless the members pay up without delay.

We have taken special pains to prevent the occurrence of typical errors, and believe this volume to compare well with its predecessors. Unfortunately the following were not detected in time, and we would ask the members to have them kindly corrected:

Page 18, line 23, column 1, read Joseph Y. Skinner, Salisbury, Md.

Page 18, line 40, column 2, read B. F. Oxley.

Page 40, line 17, read Mr. A. E. Ebert suggested Chicago.

This volume is published in paper cover, and bound in muslin, to correspond with the Proceedings of previous years. The price of the former is $1.20, and the postage 16 cts.; the price of the bound volume is $1.50, and the postage 20 cents. The work may be obtained of Messrs. S. M. Colcord, Boston; P. W. Bedford, New York; Prof. J. Faris Moore, Baltimore: W. J. M. Gordon, Cincinnati; Eugene L. Massot, St. Louis; E. H. Sargent, Chicago, and by application to the Executive Committee.

By reference to page 20, it will be seen that the stock of Proceedings, of several years, has been nearly exhausted. Those who wish to complete their set, can do so by applying to the undersigned. The back volumes are held at the following prices: 1853, 1854, 1856, 1857, unbound 25 cents each; 1860, bound 80 cents; 1853, 1859, 1862, 1863, each $1.00.

Trusting that the labors of the Committee will be received with a friendly acceptance, and all remarks in a kind spirit, this volume is recommended to the favorable consideration of all brethren in pharmacy.

JOHN M. MAISCH,
Chairman of the Executive Committee.

MINUTES

OF THE

TWELFTH ANNUAL MEETING.

1864.

The Twelfth Annual Meeting of the American Pharmaceutical Association commenced its proceedings at the Hall of the Catholic Institute of Cincinnati, Cincinnati, on Wednesday, September 21st, 1864, at 3 o'clock P. M.

The President, Mr. J. Faris Moore, of Baltimore, Md., in the chair; H. N. Rittenhouse, of Philadelphia, acting as Secretary.

The Chair appointed a Committee on Credentials, composed of Messrs. Evan T. Ellis, of Philadelphia, H. W. Lincoln, of Boston, and A. P. Sharp, of Baltimore, who, upon examination, reported the following gentlemen as Delegates duly appointed to attend the present meeting:

From the Massachusetts College of Pharmacy.—Messrs. H. W. Lincoln, R. R. Kent, Charles A. Tufts, A. P. Melzar, Thomas Hollis.

From the Philadelphia College of Pharmacy.—Messrs. E. Parrish, Evan T. Ellis, Wm. Procter, Jr., Alfred B. Taylor, John M. Maisch.

From the Baltimore College of Pharmacy.—Messrs. J. B. Baxley, A. P. Sharp, J. Faris Moore, Wm. Caspari, H. A. Elliot.

From the Cincinnati College of Pharmacy.—Messrs. P. Reinlein, L. Groneweg, A. W. Fœrtmyer, O. Heineman, C. H. Bode.

See *Second Session* for the Delegates from the College of Pharmacy of the City of New York and the St. Louis Pharmaceutical Association, and fifth session for the Delegation from the Chicago College of Pharmacy.

The following gentlemen were reported as having been elected members since the last meeting, by the Executive Committee:

Thomas Jefferson Covell, Springfield, Ill.
Wm. Kent, Fort Dodge, Webster County, Iowa.
Joseph L. Parker, Fort Dodge, Webster County, Iowa.
R. C. Lineaweaver, Washington, D. C.
Francis P. Green, Bellefonte, Pa.
F. T. Maynard, Petaluma, Cal.
Hubert Primm, Carondelet, Mo.

The Committee presented the following names for membership:

Clayton N. Wills, Philadelphia, Pa.
Chas. F. Gristock, "
Samuel Campbell, "
George H. Ashton, "
Theodore St. Clair, "
William Ellis, "
Edward H. Buehler, "
Henry B. Morris, "
Geo. Edward Jeannot, "
Edward C. Jones, "
Wm. C. Bakes, "
S. Mason McCollin, "
John H. Winklemann, Baltimore, Md.
Joseph Y. Skinner, Baltimore, Md.
Thomas A. McConville, Worcester, Mass.
Erastus N. Champlin, Saratoga Springs, N. Y.
Geo. H. Fickhardt, Circleville, O.
Eugene Alex. Houston, Yonkers, N. Y,
Alfred J. Rankin, Pittsburg, Pa.
Simeon Johnston, "
Dr. F. Mahla, Chicago, Ill.
E. H. Sargent, "
Albert E. Ebert, "
James W. Mill, "
N. Gray Bartlett, "
David Coggins, Lowell, Mass.
L. Groneweg, Cincinnati, O.
A. W. Foertmyer, "
John Keeshan, "
G. A. Hiller, "
F. A. Crowther, "
Alfred C. Hill, "
I. L. A. Greve, Cincinnati, O.
Samuel B. Allen, "
A. Wagner, "
H. F. Reum, "
A. Rutenick, "
E. Berghousen, "
A. Fennel, "
Ernst Kampfmueller, "
Chas. Kampfmueller, "
James W. Nadand, "
Uriah F. Shalter, "
E. Kunckel, "
George Merrell, "
Henry Gers, "
C. H. Bode, "
O. Heineman, "
Wm. Karrmann, "
E. W. Crowther, "
T. D. Wells, "
H. H. Hill, "
A. M. Johnston, "
James Markward, "
Wm. Tilley, "
A. Salpins, "
A. Langenbeck, "
L. Witzell, "
W. J. Fritsch, "
W. E. Reifsnider, "
John M. K. Walker, "
Hiram Maguire, "
W. H. Durkee, "
R. B. Oxley, "
Matthew Yoston, "
Michael Parr, "
S. L. Hayden, "
J. G. Fratz, "

A. Hottendorf, Cincinnati, O.
George Eger, “
S. B. Tomlinson, “
W. H. Klayer, “
Jos. H. Debolt, “
Griffith Rees, “
C. M. Helman, “
Otto Lippert, Cincinnati, O.
H. M. Merrill, “
Charles Foertmyer, “
Wm. Snyder, “
George W. Willcox, Columbia, Hamilton County, Ohio.
L. P. Stone, Newport, Ky.

A ballot being ordered, Messrs. A. J. Tully, of Cincinnati, and G. F. H. Markoe, of Boston, were appointed tellers, who reported the unanimous election of all the above-named candidates.

The roll being now called, the following members answered to their names:

A. S. Lane, Rochester, N. Y.
G. F. H. Markoe, Boston, Mass.
H. N. Rittenhouse, Phila., Pa.
Wm. B. Chapman, Cincinnati, O.
A. J. Tully, “
Wm. S. Merrell, “
W. J. M. Gordon, “
Robert R. Kent, Boston, Mass.
H. W. Lincoln, “
Evan T. Ellis, Philadelphia, Pa.
J. F. Moore, Baltimore, Md.
W. H. Adderly, Cincinnati, O.
A. B. Taylor, Philadelphia, Pa.
E. C. Jones, Philadelphia, Pa.
A. P. Sharp, Baltimore, Md.
P. Reinlein, Cincinnati, O.
L. Groneweg, “
A. W. Foertmyer, “
O. Heineman, “
C. H. Bode, “
Albert E. Ebert, Chicago, Ill.
Edward Berghausen, Cincinnati, O.
H. F. Reum, “
C. H. Foertmyer, “
G. H. Fickhardt, Circleville, O.

Mr. A. B. Taylor, Chairman of the Executive Committee, having read the report of said Committee, it was accepted.

REPORT OF THE EXECUTIVE COMMITTEE.

In accordance with the requirements of the Constitution, the Executive Committee presents the following Report of its action for the past year.

The volume of Proceedings of the Association, for 1863, was issued as early after the meeting in Baltimore as the proper revision and correction of the work, in the course of publication, and the private engagements of the Committee, would permit.

One thousand copies of the work were published; and, although the price of material and labor had very considerably advanced, it was thought best to use good paper for the volume, rather than to reduce the cost by using paper of inferior quality. The book was published in good style, and at a cost of $866 33, as will be seen by the following detailed statement of expenses:

Bill for composition and press work,	(322 pages,)	$346 08
" paper,	(23 reams, @ $11,)	253 00
" binding,	(1,000 copies,)	220 00
" engraving and printing wood-cuts,		38 00
" incidental expenses,		9 25
		$866 33

While the expenses attending its distribution were as follows :

Bill for boxes and freight,	$11 05
" postage,	28 40
" incidental expenses,	2 57
Total expense of volume,	$908 35

These expenses have been paid by the Treasurer, leaving a balance in his hands, as will be seen by his Report. The Proceedings were distributed as usual, either by mail, or through a few members residing in the large cities. Any member entitled to a copy of the Proceedings, for 1863, who has been neglected in the distribution, will be supplied by sending his address to the Chairman of this Committee, Alfred B. Taylor, 1015 Chestnut Street, Philadelphia, and notifying him of the fact.

The stock of Proceedings stored in the Philadelphia College of Pharmacy is as follows :

For 1853,	234	copies,	unbound.
" 1854,	49	"	"
" 1855,	None,		
" 1856,	32	"	"
" 1857,	292	"	"
" "	35	"	bound.
" 1858,	293	"	unbound.
" "	46	"	bound.
" 1859,	90	"	"
" 1860,	225	"	"
" 1862,	350	"	"
" 1863,	254	"	"

This stock is exclusive of eighty volumes of various years, brought by the Executive Committee to Cincinnati. In addition to these volumes there are, no doubt, others remaining in the hands of parties in various sections of the country, to whom they have been sent for sale or distribution. It would, perhaps, be advisable for the Association to pass a resolution requesting all such copies, and all copies that may hereafter be sent for distribution, and remaining on hand at the time of our annual meeting, to be sent to the Chairman of the Executive Committee for the succeeding year, to be deposited by him along with the remainder of the stock. In view of the value of this gradually accumulating stock, it is suggested that it would be prudent to have it insured, and we recommend that the next Executive Committee be authorized to have such insurance effected.

Copies of the Proceedings were distributed to the leading public Libraries, and about fifty copies to foreign Societies, Libraries and individuals, through the Smithsonian Institute.

As has been seen above, a considerable number of volumes of this and of previous years remain on hand, and your Committee would suggest the propriety of members completing their sets of volumes as far as practicable. A large amount of money might thus be raised, and perhaps enough to publish the volumes which are now out of print.

In consequence of the very great advance in prices, both of labor and material, your Committee is of opinion that, unless a corresponding advance be made in the revenue of the Association, it will be impossible to continue the publication of the Proceedings. It is hoped that means will be devised whereby this important end may be attained. We would suggest that the annual contribution of members be advanced to three dollars, and that the price of the Proceedings be raised to one dollar and a half per copy. We would also recommend that life members be charged with all copies of Proceedings they may hereafter receive.

Since our last meeting seven members have been elected by the Executive Committee; their names have been reported.

The subject of prizes having engaged the attention of the Association for several years, and no practical plan having been adopted, the following suggestions are submitted for the consideration of the members.

It is proposed that two prizes be offered for Essays presented to the Association, to be awarded at the meeting subsequent to the one when such Essays are presented. The chief difficulty heretofore in offering prizes has been the want of funds, and to obviate this the following plan is suggested:

The prizes, and the persons to whom they shall be given, shall be decided by vote, any person being allowed to give as many votes as he pleases, for any candidate he may select, on the payment of 25 cents for each vote; the candidate receiving the highest number of votes to retain the first prize, not to exceed $50; and the candidate receiving the next highest vote to receive the second prize, not to exceed $25.

It is also proposed that a prize, not to exceed $25, be given to the person presenting to the Committee on Queries the best "Three Queries for investigation at a subsequent meeting of the Association." The merits of the Queries proposed to be decided upon by the aforesaid Committee.

Should the amount subscribed be insufficient to pay the above prizes, then the amount subscribed to be divided pro rata; that is, one-half for the first prize and one-fourth for each of the others.

In addition to the above, it is suggested that the Association have prepared the dies for an appropriate medal, and that medals be struck therefrom in gold, silver and bronze, one of each description to be awarded annually to three persons respectively most deserving, for general service and usefulness to the Association. The medals to be distributed by ballot of the members, on the last day of each Annual Meeting of the Association.

We would recommend that the Committees on Scientific Queries, on the Drug Market, and on Business, be made Standing Committees, since they are equally permanent and important with those now called Standing Committees. These Committees have grown into importance with the growth of the Association, (and no doubt the list will be hereafter further extended), and upon their action in a very large degree depends the interest and success of the Association.

This would involve a slight change in Article IV. of the Constitution, which now provides for the election of only two Standing Committees. Sections should be added, explaining and defining the duties of these Committees.

Before closing this report, the Committee is reminded of a sad duty it is called upon to perform. It is that of recording the names of members deceased since our last meeting.

During the past year, several of our associates have been taken from our midst: of such, the following names have been reported to the Committee:

Franklin Bache,	Philadelphia, Pa.
John Meakim,	New York, N. Y.
George W. Weyman,	Pittsburgh, Pa.

Dr. Franklin Bache, eminent as a teacher of Chemistry, and intimately connected with the progress of Pharmacy in the United States, as one of the authors of the U. S. Dispensatory, died on the 19th of March, 1864, in the 72d year of his age, after a short illness from typhoid fever. Dr. Bache was the great grandson of Benjamin Franklin, and inherited some of the best qualities of that eminent philosopher. He was educated at the University of Pennsylvania, and graduated as Doctor of Medicine in 1814, just fifty years previous to his death. For a few years he was connected with the army, but subsequently entered private practice as a physician. His tendencies were strongly scientific, and as early as 1819 he published a work on chemistry for medical students. He afterwards lectured on chemistry in the Franklin Institute and in the Philadelphia College of Pharmacy, in which Institution he lectured for about ten years, until elected Professor of Chemistry in the Jefferson Medical College, which position he occupied at his decease. He was elected Honorary Member of this Association in 1857. Dr. Bache had been President of the American Philosophical Society, Vice President of the College of Physicians, and President of the Institution for the Deaf and Dumb of Philadelphia. But it is his connection with the Dispensatory, and with four successive revisions of our national Pharmacopœia, that should render his memory unforgotten by the apothecary, who owes to his persevering industry and extreme accuracy much of the advancement which our art has attained within the last thirty years. No amount of pains and trouble deterred him from being satisfied of the accuracy of his views, or in testing the statements of others; and whilst, on the one hand, his lectures were rendered somewhat tedious to the advanced student, his conscientious aim was to make his views clear to all.

Dr. Bache, though rather reserved in his deportment, and not so approachable as many men are, was constant in his friendship, and true to the best instincts of a gentleman in his intercourse with his fellow-men. We cannot do better in concluding this article than to quote the language of Dr. Wood in the dedication of his work on Therapeutics, to Dr. Bache, wherein he says, " Whom in the course of an intimate acquaintance of thirty years I have never known to do an unjust act, or cherish an unjust thought; the accurate man of science; the skilful teacher; the upright and honorable man; and in all points the gentleman."

John Meakim was born in New York City, in the year 1812. At an early age he obtained a situation in the apothecary's department of the New York City Dispensary, attended the lectures of the New York College of Pharmacy, and obtained its diploma in 1836. Soon afterwards he engaged with Messrs. Rushton & Aspinwall, druggists, remaining with them until 1840, when he commenced business for himself, continuing it without interruption until the time of his death. On Saturday, October 17th, 1863, while dispensing a prescription, his arm fell paralyzed, and though no unpleasant results were anticipated, he survived but a few hours. He was one of the original members of this Association, and was elected Vice President in 1854, and President in 1855. He was connected with the College of Pharmacy of his native city, having served it as Member, Secretary, Vice President and President, in all, for twenty-four years. He was a noble specimen of our profession. No inducement could swerve him from the path of duty. Faithful in his attention to business, he forgot the toilsome cares of the pharmaceutist in his desire to render his duty to those depending upon him. Those members who knew him personally will long cherish his genial wit, his manly intelligence, his earnest endeavor to promote the welfare of those in his profession. Cut down in the midst of his usefulness, at the height of his career, he has left but too few to sustain the character of which he was so bright an example.

George W. Weyman was born in Pittsburgh, Pa., March 22d, 1832. He was placed in the Western University of Pennsylvania, at Pittsburgh, where his early education was sufficiently advanced, and from there went to Yale College in 1849, where he pursued his studies in the Chemical

School until September, 1852. Early in the following year he went to Germany, and became a student in the Laboratories of Munich and Göttingen, taking the degree of Ph. D. On his return to the United States in 1856, he spent a short time with Prof. Silliman at Yale, and then repaired to his native city, to put into practice the store of useful knowledge he had acquired under such favorable circumstances. He opened a laboratory and Pharmaceutical store combined, in which he prosecuted the business successfully, until his life was terminated by severe and rapid illness on the 16th of June, 1864. Dr. Weyman was much esteemed by the Members of this Association, which he joined in 1858, and of which, at the time of his death, he was one of the Vice Presidents. Cut off at 32 years of age, in the prime of his early manhood, his loss is deeply deplored by his associates and friends in the Association, and we tender to his relatives our sincere condolence.

In addition to the above list, the Committee has considered it a duty to record the death of one who, though not a member of this Association, was a careful observer of its progress, and felt a lively interest in its proceedings: Dr. Robert P. Thomas, late Professor of Materia Medica in the Philadelphia College of Pharmacy.

Dr. Thomas was born in Philadelphia, on the 29th of May, 1821. His father, Daniel J. Thomas, and his mother, who was a daughter of Robert Pennel, of Chester county, Pennsylvania, were descended from early settlers of this Commonwealth, and were members of the Society of Friends.

In early boyhood he was a pupil in the Friends' Academy, Philadelphia; he was afterwards sent to Westtown Boarding School, in Chester county, where he obtained a good English education. At the age of 16, he entered into the service of Messrs. Walter & Souder, shipping merchants, by whom he was much esteemed. While thus engaged he acquired a knowledge of the French language; his ambition seems to have been early directed toward the medical profession, and accordingly he commenced the study of medicine under the tuition of Dr. George Fox. In 1847 he graduated in the University of Pennsylvania. In 1850 he was elected Professor of Materia Medica in the Philadelphia College of Pharmacy, a position he seemed eminently qualified to fill, and the duties of which he discharged with signal ability and success. At the time of his decease, he was undoubtedly one of the best lecturers on Materia Medica in the United States.

His first literary labor after entering the medical profession, was the translation from the French of the first edition of Caseux's Midwifery, a work which has since gone through three editions and become a standard treatise on that subject.

He has written various essays and papers for medical journals, for the American Journal of Pharmacy, and for this Association. In the Procreedings for 1860 will be found his paper on Garlic, in answer to a Query referred to him by this Association; and in the volume for 1862, a short essay on the culture of Elaterium.

The most extensive editorial labors of Dr. Thomas were connected with the revision of Griffith's Universal Formulary and Ellis' Medical Formulary. The former, by Dr. R. Egglesfield Griffith, appeared in 1850, and was re-edited by Dr. Thomas in 1854, who enlarged it by the addition of 70 pages of new matter, and improved it by original modifications. Ellis' Formulary had passed through nine revisions before Dr. Thomas became its editor; he twice revised it, and it was the last literary effort on which he was engaged, the eleventh edition having been published but a few weeks before his death.

From early life Dr. Thomas was of a serious and conscientious turn. In March, 1853, he attached himself to the Episcopal church, and was an active member of the vestry, and warden at Grace Church at the time of his decease.

His death was sudden and very unexpected. He lectured to his class in the College on the evening of the first of February, apparently in good health and spirits. On the following morning he was quite ill, and in thirty-six hours from the first appearance of disease, his spirit passed away. His disease, a prevalent one during the past winter, is generally known as spotted fever.

Thus in the 43d year of his age, in the full vigor of life and manhood, our friend has been called away, universally respected and deeply lamented by all, whose good fortune it was to have made his acquaintance.

ALFRED B. TAYLOR, *Chairman.*

The business next in order was to nominate officers for the ensuing year, but Delegates from some of the Colleges, who were known to be on the way, not having arrived, it was thought best to appoint a Committee, and leave the absent delegations to name candidates, when they arrive. The following gentlemen were appointed, accordingly, a Nominating Committee, agreeably to the Constitution:

H. W. Lincoln, Boston.
Wm. Procter, Jr., Philadelphia.
A. P. Sharp, Baltimore.
P. Reinlein, Cincinnati.
E. L. Massot, St. Louis.

To which were added by the President:

E. Parrish, Philadelphia.
A. E. Ebert, Chicago.
Dr. E. R. Squibb, Brooklyn.

On motion of Evan T. Ellis, the Medical Profession were invited to be present at the meetings of the Association. Adopted.

The President then read his Annual Report.

ANNUAL REPORT OF THE PRESIDENT.

Gentlemen of the American Pharmaceutical Association :

The period has once more arrived which calls us together as an association of Pharmaceutists, for the advancement of the art and science of Pharmacy, and our own mutual improvement; and it becomes my pleasure, as well as my duty in compliance with a constitutional requirement, to address my associates.

The condition of our country, which has so distracted the public mind, and directed it from the pursuit of peaceful avocations and scientific research for the past three years, still continues; and the hope so fully indulged by all at our last meeting, that peace and unity would once more bless our country ere we were again assembled, has been disappointed. It is, however, with sincere gratitude to Him, who rules in war as well as in peace, that I congratulate you that you are enabled to meet in this beautiful city again to renew our associations, and pursue the useful and beneficial objects of our Convention.

The continuance of war materially affects the usefulness as well as the prosperity of the Association, by calling many of our best and ablest associates into other pursuits, and cutting us off from many of our brethren, who in former times met with and gave us their aid. Yet let us hope that before we again assemble, the blessings of peace may once more visit our land, and we may be permitted to meet with friends long separated from us, and enjoy all the benefits of association so long denied us. It is cause for congratulation that so many of our number are spared to lives of usefulness; yet in the providence of God we are called upon to mourn the absence of some bright names, whose presence we have enjoyed, and whose words we have listened to with pleasure for the last time, among which is that of the lamented Meakim. His absence leaves a void which time will scarcely fill. Yet it is with satisfaction that we can say, he has performed his part faithfully, whilst amongst us,—has finished his work, and passed to his reward in another world. I regret that my numerous engagements, apart from my regular occupation, have precluded the possibility of my communicating with the various Standing Committees, but from the known zeal and ability of the gentlemen composing the Committees, together with their Chairmen, I feel assured we will have able and interesting reports from all.

The report of the Treasurer on the financial condition of the Association for the past year, is highly gratifying: notwithstanding the increased expenses attending the publication of the Proceedings and other incidental expenses, the funds have been sufficient for all expenditures, and leaves a large balance for the coming year.

The Treasurer in his report calls your attention to several subjects of importance, to which I would solicit your earnest attention. On examination of his books, it will be found that there are many enrolled as members, who have failed to pay their dues for a number of years. Some, indeed, who have not paid their first subscription, and several are now tendering their resignations.

I think the Association should take some action with regard to such cases, and would suggest that the Executive Committee be instructed to withhold the Proceedings from all members in arrears for more than three years. It is also desirable that the Treasurer should have some instructions as to the disposition he is to make of those tendering resignations whilst in arrears. Accompanying the report are several communications, which the Treasurer is desirous to lay before the meeting, that he may receive instructions as to the disposition to be made of them. In view of these circumstances, I would suggest that the whole subject be referred to the Executive Committee, or to an especial Committee appointed for that purpose, to report at our next annual meeting.

I would again call the attention of the Association to the fact that the time is fast approaching when many of our members will, in compliance with the Constitution, cease to be Contributive Members. Some, indeed, are already entitled to Life Membership, and in view of the fact that the income will not more than meet necessary expenditure, it becomes a serious question whether we will be justified in depending solely upon new members for support. I would recommend the suggestion of our former President, Prof. Procter, that the Annual Subscription be reduced to *one dollar* after ten years' Membership.

I would call attention to the fact that the names of many Members are omitted from the list published in the last Proceedings, and would suggest a careful revision in the forthcoming volume.

In closing, permit me to call your attention to a subject which, although not within the direct sphere of our duties as an Association, is, I conceive, of vital importance to us as a profession.

This Association, in connection with the various Colleges, has already done much to raise the standard of our profession from mere dispensing apothecaries to their true position among kindred professions, and we already see a great advance in the character and attainments of the pharmaceutists. But the subject to which I would call the earnest attention of this Association, and through it the profession generally, is with regard to the requisite preliminary acquirements of those entering upon the study of Pharmacy.

We often find young men who, though apt at their manipulations, and possessing, perhaps, more than ordinary talents in other respects, most wofully deficient in their general education; and this is in many cases a drawback of no small importance to themselves, the profession and the community at large.

I should think means could be easily devised by which the standard of necessary education might be raised to such a height, as would be both beneficial and acceptable to all, and especially contributory to the dignity of the profession.

Pharmacy is, in the highest and most exalted acceptation of the word, a *science*. In that one word, whose real import and significance but few comprehend, are embraced a host of collateral branches of knowledge, the attainment of which are indispensable to him whose ambition aspires to the title of Pharmaceutist in its proper sense.

With the high appreciation of the honor conferred upon me, grateful for the kindness and indulgence extended toward me as President of this Association, and with the hope that in the providence of God we may all be enabled to meet again at our next annual meeting, I transfer to my successor a position which I sincerely hope he may be more capable of filling than myself.

J. Faris Moore, *President*.

It being impossible to proceed in business, on account of the absent delegations, it was moved and seconded that we adjourn, to meet to-morrow morning at 9 o'clock.

The meeting then adjourned.

Second Session—Thursday Morning.

The Association met at 10¼ o'clock A. M., the President in the Chair.

The Minutes of the previous meeting being read by the Secretary, on motion, were adopted.

The Roll being now called, the following members, additional to those of yesterday, answered to their names:

H. T. Kiersted, New York.
P. W. Bedford, "
John M. Maisch, Philadelphia.
R. H. Stabler, Alexandria, Va.
H. Haviland, New York.
F. T. Whitney, Mass.
G. Burrington.
W. Procter, Jr., Philadelphia.
Geo. C. Close, Brooklyn.
Fred. Stearns, Detroit.
E. W. Sackrider, Cleveland.
Theo. Kalbe, St. Louis.
Edwin R. Smith, Monmouth, Ill.
Eugene L. Massot, St. Louis.
Hubert Primm, "
E. R. Squibb, Brooklyn.
E. Parrish, Philadelphia.
E. S. Wayne, Cincinnati.
Enno Sander, St. Louis.
W. E. Reifsnider, Cincinnati.
Wm. Nadaud, "
A. M. Johnson, "

The Committee on Credentials reported Messrs. Theo. Kalbe, Hubert Primm, Enno Sander, E. L. Massot, James McBride, as Delegates from the St. Louis Pharmaceutical Association: also, Messrs. H. T. Kiersted, G. C. Close, J. W. Shedden, F. F. Mayer, P. W. Bedford, as Delegates from the College of Pharmacy of New York.

The Executive Committee presented the following names for membership; a ballot being ordered, Messrs. G. F. H. Markoe, of Boston, and Edward C. Jones, of Philadelphia, acted as tellers, who reported them as duly elected:

A. Samson, Richmond, Ind.
D. B. Miller, Covington, Ky.
H. R. Miller, "
John T. Hanning, "
George J. McKay, Mount Vernon, Westchester County, N. Y.
Wm. S. Shuey, Springfield, O.
W. H. Crawford, St. Louis, Mo.
Alfred Mellor, Philadelphia.
Spencer O. Hatfield, Brooklyn, N. Y.
Gilbert Long, Brooklyn, N. Y.
Sylvester M. Carle, "
Joseph Abel, Pittsburg, Pa.
Geo. A. Kelley, Allegheny, Pa.

The Committee on Nominations being ready to report, named the following gentlemen for Officers and Standing Committees for the ensuing year:

For President.[*]

W. J. M. GORDON,	Cincinnati, Ohio
FRED. STEARNS,	Detroit.
E. L. MASSOT,	St. Louis.

For Vice-Presidents.

First, RICHARD H. STABLER,	Alexandria, Va.
Second, ENNO SANDER,	St. Louis.
Third, THOMAS HOLLIS,	Boston.

Treasurer.

J. B. BAXLEY,	Baltimore.

Recording Secretary.

H. N. RITTENHOUSE,	Philadelphia.

Corresponding Secretary.

P. W. BEDFORD,	New York.

Executive Committee.

JOHN M. MAISCH, *Chairman*,	Philadelphia.
WM. WRIGHT, JR.,	New York.
W. H. ADDERLY,	Cincinnati, O.
H. A. ELLIOTT,	Baltimore.
H. N. RITTENHOUSE, *Rec. Sec. ex-off.*	

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[*] The reason why three names were presented for President, was to do away with the precedent of electing a President from the city in which the Association meets, as it might so happen that such a course would be inexpedient; and, besides, would always exclude worthy members from being candidates, from towns where the Association would not be likely to assemble.

Committee on Progress of Pharmacy.

Alfred B. Taylor, *Chairman*,	Philadelphia.
C. H. Bode,	Cincinnati.
Edwin R. Smith,	Monmouth, Ill.
E. H. Sargent,	Chicago, Ill.
P. W. Bedford, *Cor. Sec. ex-off.*,	New York.

Mr. Taylor declining to serve as Chairman, this Committee, on motion of Mr. Haviland, was referred back to the Nominating Committee, to report at the afternoon session.

A ballot being had for President, the tellers announced W. J. M. Gordon as having received four-fifths of the votes; when, on motion, the election of Mr. Gordon was declared unanimous.

The chair being now vacated by the retiring President, Mr. Gordon took his place with some very appropriate remarks.

On motion, the President was authorized to cast the ballot for the remaining Officers and Committees, upon which the tellers reported their election.

The Business Committee offered the following Resolutions, as Amendments to the Constitution, to come up at the next meeting of the Association for final adoption.

Notice to amend the Constitution:

Resolved, That Article III., Section I. of the Constitution be amended by inserting after the words "Who shall," the words "With the exception of the Recording Secretary." Section I. will then read as follows:

"Article III. Section 1st.—The officers shall be a President, two or more Vice-Presidents, a Recording Secretary, a Corresponding Secretary and a Treasurer, who shall, with the exception of the Recording Secretary, be elected annually, and shall hold office until an election of successors."

Resolved, That a new Section, to be called Section II., be introduced under Article III., as follows:—The Recording Secretary shall be elected to hold office permanently, during the pleasure of the Association; shall receive from the Treasurer an annual salary of one hundred dollars, and the amount of his actual travelling expenses to and from the place of annual meeting, in addition to his salary.

Resolved, That the present Section II. be called Section III., and the numbering of the remaining Sections of Article III. be corrected in accordance with these Amendments.

Resolved, That Section IV. be amended by substituting after the words "received by the Association," the words "and shall be charged with editing, publishing and distributing the Proceedings of the Association, under the direction of the Executive Committee," for the remainder of this Section. The Section will then read as follows:

"The Recording Secretary shall keep fair and correct minutes of the proceedings of the meetings, and carefully preserve on file all reports, essays and papers of every description received by the Association, and shall be charged with editing, publishing and distributing the Proceedings of the Association, under the direction of the Executive Committee."

Resolved, That the subject of this Amendment be laid over for action at the early session of the next annual meeting of the Association, so that, if adopted, the Nominating Committee may act in accordance with the Amendment, in selecting a candidate for permanent Secretary.

The Treasurer's Report was now read by Mr. J. F. Moore, in the absence of the Treasurer, Mr. J. B. Baxley.

On motion, the Report was accepted.

TREASURER'S REPORT.

BALTIMORE, Sept. 15th, 1864.

To the Officers and Members of the American Pharmaceutical Association:—

It affords me pleasure to present the same healthful condition of the Treasury of the Association. as when I took charge of it one year since. Notwithstanding the increased expenditure incurred in publishing the Proceedings, yet the balance on hand is within forty-five dollars of what it was last year, and the Association free of debt.

I concur in the statement of the late Treasurer, viz: that our present financial prosperity "is owing to a large number of delinquent Members still coming forward and paying their arrears." There are many, however, as the accompanying letters will show, who repudiate their dues, and many more who do not deign to take any notice whatever of the frequent appeals of the Treasurer. This matter claims some action on the part of the Association. I have grave doubts, however, whether the proper time has yet arrived to agitate the subject. But in view of any action that may hereafter be taken, recommend that the Treasurer be instructed to make an alphabetical list of the entire Membership, and their standing with the Association, to be presented at the next Annual Meeting.

I am satisfied, from the frequent applications I receive for information on subjects that are recorded in the Constitution and By-Laws, that the Association should have that instrument printed in pamphlet form, and the Secretary be required in all cases to notify new Members of their election in writing, with a copy of the Constitution and By-Laws accompanying the notification. For the necessity of the above recommendation, I would refer to letter marked No. 11.

Several of the Members have called my attention to the fact of their names not appearing on the Roll of Membership, and one, that there is no evidence whatever of his election in any part of the printed Proceedings. Accompanying, I enclose a list of the names referred to above, marked No. 3. With many regrets that I am not able to meet the Association this year, I am very respectfully, &c.,

J. Brown Baxley, *Treasurer.*

Statement of Receipts and Disbursements of the American Pharmaceutical Association for the Year ending September 15*th*, 1864.

RECEIPTS.

1863.			
Sept.	10.	To amount rec'd of H. Haviland, former Treasurer,	$498 34
1863 & '64.		" " " from Contributors, - -	800 00
"		" " " " Sale of Proceedings, -	29 30
"		" " " " Sale of Certificates, - -	39 00
			$1366 64

DISBURSEMENTS.

1863.						
Oct.	6.	Voucher	No. 1.	Filling Certificate, -	75	
Dec.	8.	"	No. 2.	Expenses on Sale of Proceedings, -	3 00	
"	14.	"	No. 3.	Publishing Proceedings, - -	300 00	
"	15.	"	No. 4.	Postage Stamps, Paper, &c., -	68	
1864.						
May	25.	Voucher	No. 5.	Filling Certificates, -	5 00	
Sept.	10.	"	No. 6.	Freight on Books, -	50	
May	9.	"	No. 7.	Publishing Proceedings, - -	550 00	
June	14.	"	No. 8.	Printing Bill Heads,	7 50	
Aug.	5.	"	No. 9.	Bill of P. W. Bedford,	4 94	
"	5.	"	No. 10.	Engrossing Resolutions, - -	2 00	
"	5.	"	No. 11.	Bill of B. Westerman,	50	
"	5.	"	No. 12.	Bill of do. do. -	6 00	
"	5.	"	No. 13.	" Chem. News, -	2 70	
"	5.	"	No. 14.	" Dodge & Grattan, - -	5 75	
Sept.	12.	"	No. 15.	Bill of Postage Stamps, &c., - -	14 02	
						903 34

Balance on hand Sept. 15th, 1864, $463.30

Respectfully submitted by J. Brown Baxley, *Treasurer*
A. P. Association.

LIST OF NAMES REFERRED TO IN REPORT OF TREASURER.

Thos. E. Kirby,	Baltimore, Md.
Columbus Emick,	" "
E. Walton Russell,	" "
E. Wesley Cunningham,	" "
John P. Muth,*	" "
Jonas Winter,	Hagerstown, Md.
R. F. Toplis,	Yonkers, N. Y.
S. Robinson Cole,	Baltimore, Md.
Alonzo Lilly,	" "

J. Brown Baxley, *Treasurer.*

* This is the name referred to as not appearing in the Proceedings at all.

On motion, a Committee was appointed to audit the Treasurer's Report. The Chair appointed Messrs. F. Stearns, J. F. Moore and H. Haviland, said Committee.

On motion, the Report of the Executive Committee was again read by Mr. A. B. Taylor, its Chairman, with the addition of an obituary notice of the late John Meakim, of New York; the obituary was ordered to be incorporated in the Report, and the Report accepted. (See page 19.)

The Report of the Committee on the Progress of Pharmacy, in the absence of the Chairman, G. J. Scattergood, was presented by Mr. Procter, who read some extracts from it.

The Report was accepted, and ordered to be handed to the Executive Committee for publication.

The Corresponding Secretary's Report was read by Mr. P. W. Bedford; the Report was accepted and ordered to be published.

The Report of the Committee on the Drug Market being next in order, was read by the Chairman, Mr. J. M. Maisch. On motion it was accepted and ordered to be published.

The Report of the Committee on the Election of Members and Membership being in order, was read by Mr. E. Parrish. On motion it was accepted and ordered to be published.

REPORT OF THE SPECIAL COMMITTEE ON THE ELECTION OF MEMBERS, &c.

The Committee appointed to take into consideration the present constitutional provision for the election of members, and also the propriety of issuing a new form of Certificate of Membership, report, that a sudden death, which will be officially reported by the appropriate Committee, deprived them of the counsel of their experienced colleague, John Meakim. Of the two remaining members, the preparation of the report has devolved entirely upon the Chairman, owing to a want of facility for comparison of views since the time of their appointment.

The trouble attendant upon the election of members during the recess by the action of the Executive Committee, seems to be so unnecessary, in view of the occurrence of regular meetings of the Association annually, that we propose to strike out the last paragraph of Section 2d, Article II., of the Constitution, so that the elections shall be exclusively at the meetings of the Association.

In view of the increased expense of issuing the Proceedings and the fact of a number of our members annually becoming life members, we propose that the annual contribution shall be increased from two to three dollars, and that the requisite alteration be made in Section 4 by substituting the word *three* for two in the second line of the section, as published in the last volume of Proceedings.

We propose to alter Section 7 of Article II., striking out "and entitled to a certificate to that effect," and inserting in its stead, "they shall not be entitled to receive copies of the Proceedings gratuitously, unless by vote of the Association.

These suggestions will, we think, remedy the pecuniary difficulties which some have anticipated as likely to result from our present constitutional provisions.

To avoid the too free introduction of persons into membership, we recommend that the Executive Committee should in no case recommend a candidate for membership without full inquiry into his standing, and that where a local Pharmaceutical Association exists, every applicant should be required to obtain the sanction of the officers or leading members of such Association before claiming admission into the Association; and also that no pharmaceutist under 25 years of age should be elected to membership from any city in which a College of Pharmacy is in full operation, without he has previously graduated in Pharmacy.

The Certificates of Membership having been nearly all issued or defaced by misplaced signatures, it seems necessary to obtain a new design and proceed to issue them to all who may desire to avail themselves of them. The views of your Committee are unfavorable to any attempt at conspicuous devices upon the new Certificate. We would approve of reducing it in size, to correspond somewhat with those herewith exhibited, believing a plain and elegant parchment Certificate would be more consonant with good taste, than our present rather pretentious one, and would be more valued by those members who best understand the true scope and meaning of such a testimonial. The wording of the old Certificate seems appropriate, but the blank should be omitted before the word member.

Respectfully submitted,
E. Parrish, *Chairman.*

On motion the meeting adjourned until 2½ o'clock this afternoon.

Third Session—Thursday afternoon.

At 3 o'clock the President, W. J. M. Gordon, called the meeting to order.

The minutes of the morning session were read and adopted.

The Nominating Committee being ready to report presented the following as the Committee on the Progress of Pharmacy:

J. F. Moore, Chairman, . .	Baltimore.
Lewis Dohme, ...	"
C. H. Bode, ...	Cincinnati.
E. R. Smith, ...	Monmouth, Ill.
P. W. Bedford, Cor. Sec., ex-off.,	New York.

The President cast the ballot as directed and declared them duly elected.

The Committee appointed to audit the Treasurer's accounts reported that they had performed the duty assigned them, comparing the payments with the vouchers and find them correct. The corrected statement is appended to the Treasurer's report. (See page 32.)

The report was, on motion, accepted, and the auditing Committee discharged.

It was now moved, and the motion carried, to receive the essays of members in answer to the Scientific Queries, proposed at the last meeting. The queries were read by Dr. Squibb, Chairman of the Business Committee, and the following answers elicited:

Query 1st.—Fermentation and cryptogamic vegetation viewed as destructive agents in connection with drugs and pharmaceutical preparations. What are the best means of avoiding the former, and arresting the growth of the latter without injury to the drugs and preparations?

Mr. G. J. Scattergood, by whom it was accepted, in a note to the Association, states:

> "In answer to Query No. 1, I desire to state that some attention has been paid to the subject, and experiments performed with a view of discovering the cause of fermentation in syrups, &c., and the means of preventing it, but from having been engaged in other service for the Association (unexpected at the time of accepting the Query), I have been unable to investigate the matter satisfactorily."

The subject was continued to him for another year.

QUERY 2d.—Is there a practical process whereby Aloin may be easily extracted from commercial Aloes, so as to reduce the price of this principle in the market?

Mr. P. W. Bedford made some remarks regarding his investigation, the results of which had not been satisfactory to himself. It was moved and carried to refer this subject back to the Committee on Queries.

QUERY 3d.—Is there an eligible method, by means of which all the medicinal matter of Cinchona may be held in a permanent solution without deposition of cincho-tannates or cinchonic red?

This was answered by Mr. A. B. Taylor, and the paper referred to the Executive Committee for publication. The preparation exhibited by Mr. Taylor was very handsome in appearance and elicited some discussion, the success being from the use of Glycerin as a solvent, in which its value in astringent extracts was looked upon as important.

QUERY 4th.—What is the best process for extracting lard so as to fit it for the purpose of pharmacy; and what are the best means for preserving it for use during the summer and autumn?

In reply thereto, Mr. H. W. Lincoln, of Boston, read a paper and exhibited specimens. The various processes used were discussed, and, on motion, his essay was referred to the Executive Committee for publication.

QUERY 5th.—What is the proportion of Camphor present in the officinal Aqua Camphoræ?

Answered by Mr. G. F. H. Markoe, of Boston; on motion his paper was accepted and referred for publication.

This elicited considerable remark, in which the formula of the new British Pharmacopœia was alluded to.

Query 6th.—Does the Aqueous Extract prepared from Jalap, that has been previously exhausted by alcohol, possess any medicinal properties, or does the alcoholic extract of Jalap fully represent its virtues?

Mr. A. B. Taylor, of Philadelphia, read a paper which, on motion, was referred to the Executive Committee for publication.

Query 7th.—Does the volatile oil of Matico possess the power of stopping hæmorrhage, or does that property of the drug reside in some other ingredient or in the physical structure of the leaf?

A note from Mr. Higgins, of New York, was read, in which he stated that he had been unable to procure proper material to operate with.

Query 8th.—On the pharmaceutist as a merchant, and on commercial education in relation to the successful prosecution of the pharmaceutic art.

Mr. F. Stearns, of Detroit, read an interesting paper on this subject. On motion, the essay was referred for publication.

Query 9th.—Stramonium is abundant in the United States, and its alkaloid Daturia is alleged to be identical with Atropia in Belladonna. If this be true, in what relative proportions do these plants contain this principle, and why may not Stramonium be used as a source of Atropia?

No reply was received from Mr. F. F. Mayer, by whom it was accepted.

Query 10th.—It is now known that Storax is the production of Liquidambar Orientale, a tree closely resembling L. styraciflua of the United States. It is also well known that our indigenous Liquidambar yields in warm latitudes a balsamic exudation, analogous to storax in odor and to tolu in consistence; and contains cinnamic and benzoic acids. Query.—Will this tree yield a product identical, or nearly so, with commercial storax, if it is treated in the same manner?

A partial answer was received from Professor Procter, who asked to have the matter continued to him another year.

On motion of Mr. A. B. Taylor it is ordered, that in all cases, where Queries are not answered or heard from at the time of meeting, they be continued another year to the same person.

QUERY 11th.—Is Nicotina the active principle in carefully dried green tobacco leaves? Do the leaves of tobacco contain the same alkaloid? and if so, does the proportion of nicotina found in commercial (fermented) tobacco justify the belief of Liebig, (Agricultural Chemistry, Amer. ed. 184), that nicotina is an artificial product?

Professor Mayer's, paper on this subject was read by Mr. Bedford, of New York, and referred to the Executive Committee.

QUERY 12th.—What is the best arrangement for spreading plasters of uniform sizes, rapidly and well; and what is the best form and weight of spatula for spreading plasters extemporaneously? together with observations on the dispensing of this form of preparations.

Mr. W. C. Bakes, of Philadelphia, who exhibited, through Prof. Parrish, proper machines for the purpose, presented a report containing many practical observations and suggestions; on motion. his paper was referred for publication.

QUERY 13th.—Bitter Wine of Iron. What is the best formula for this preparation, in which citrate or tartrate of iron is presented along with one or more bitter tonics and aromatics, combining efficiency as a chalybeate tonic with elegance and agreeability in appearance and taste; with comments on similar preparations now in use.

The paper by Mr. J. T. Shinn, of Philadelphia, was presented and read by Mr. G. F. H. Markoe, who also exhibited some specimens of the Bitter Wine of Iron. The essay was referred to the Executive Committee for publication.

A discussion arose on the merits and characteristics of this medical preparation, in which Messrs. Markoe, Maisch, Procter and Parrish participated; Mr. Parrish maintaining that Bitter Wine of Iron is and should be a weak preparation of Iron.

QUERY 14th.—Glycerine—its mission (so to speak) in Pharmacy as a remedy, as an adjuvant, and as a solvent.

Mr. W. J. M. Gordon read a report on this query, and showed samples of various preparations made with glycerin, instead of sugar, where sugar is ordered by the Pharmacopœia. This elicited considerable discussion, in which surprise was exhibited at the low price at which glycerin is produced, and the quality and mode of manufacture was alluded to. On motion, the paper was referred to the Executive Committee for publication.

QUERY 15th.—It has been stated that the poisonous properties of Rhus toxicodendron reside in a volatile alkaloid. Is this true? Is this alkaloid dissipated when the leaves are dried? Can it be isolated in a state fit for medical use, or can the properties of the leaves be preserved in some form as a pharmaceutical preparation?

Mr. Maisch, by whom this was accepted, asked to have it continued, which was granted.

QUERY 16th.—The leaves of Solidago odora possess the odor of anise. Are their medicinal properties due to a volatile oil, identical in composition with the oil of anise?

A letter was read by Mr. Taylor from Mr. Heinitsch, of Lancaster, Pa., giving a partial answer to the two queries which he accepted, viz. Nos. 16 and 18.

QUERY 17th.—The oil of Erigeron Canadense is frequently employed in medicine for uterine hæmorrhage. Is its reputation deserved? Where is it chiefly produced? In what proportion does the herb yield oil? and what are its physical and chemical properties?

No answer was received, Dr. R. P. Thomas, to whom it had been referred, being dead.

QUERY 18th.—The taste of Dittany (Cunila Mariana) is very like that of horse mint (Monarda punctata). Does the volatile oil of the former resemble that of the latter in physical and chemical properties?

See answer to No. 16.

QUERY 19th.—Spatulas, stirring-rods, agitators and mechanical stirrers used in pharmaceutical preparations; their material and quality, form and construction, with critical remarks.

Mr. T. S. Wiegand, of Philadelphia, presented a report through

Prof. Procter, which, after having been read, was, on motion, referred to the Executive Committee for publication.

Some pharmaceutical preparations were exhibited by W. J. M. Gordon & Brother, and called forth much commendation from the members.

On motion adjourned until 7½ o'clock.

Thursday Evening—Fourth Session.

At eight o'clock the President called the meeting to order.

The minutes of the last session having been read were, on motion, adopted.

A letter was received from Mr. Larz. Anderson offering to conduct the members of the Association through the extensive wine cellars of the late Mr. Longworth should they desire to visit them. On motion the letter was accepted.

The business of deciding upon a place of meeting for the Association next year being in order,

Mr. A. E. Ebert suggested Cincinnati.
" J. F. Moore " Baltimore.
" P. W. Bedford " Boston.

Dr. Squibb moved that the Association meet next year in Boston. The motion was amended and the amendment accepted, to meet on the first Tuesday in September next, at 3 o'clock, P. M. The motion was then unanimously adopted.

Dr. Squibb read the following proposition of the retired President: That the Executive Committee be directed to withhold the volume of proceedings from all members who may be three years in arrears in their payments to the Treasurer.

A discussion of the above proposition was maintained by Messrs. Squibb, Bedford, Moore, Parrish and Markoe. Dr. Squibb read from Art. II., Section IV., of the Constitution, "that a member is liable to lose his right of membership by neglecting to pay said contribution for three successive years."

Mr. Moore offered as an amendment, "Notification being first given," which was accepted.

The resolution, as amended, was after much debate finally carried.

The Business Committee offered the following resolution:—

Resolved, That a Committee of two be appointed to examine the books of the Treasurer in regard to all arrearages, and to report to the next annual meeting the number and names of members who may be in arrears, the condition under which these arrearages may have occurred, and suggestions for the disposal of delinquent memberships. Adopted.

Messrs. Moore and Baxley (the Treasurer) were appointed said Committee.

The Business Committee offered the following resolution :—

Resolved, That members who may have received the volume of Proceedings and are in arrears with their annual dues to the Treasurer, and who may return his bills unpaid, or offer to resign with such arrearages unpaid, shall be expelled from the Association, and their dismissal or expulsion be published in the volume of Proceedings after the roll of members.

Mr. Parrish objected to publishing names of expelled members.

On motion the resolution was adopted.

The subject of Life Membership being introduced, it was proposed to charge $1 a year after ten years' membership. Mr. Taylor suggested that Life Members should not be annually assessed, but that they be charged for the Proceedings. Dr. Squibb suggested that the matter remain as it now is, allowing Life Members all their privileges, but should funds be wanted, to raise the deficiency in some other way. On motion, the whole subject of Life Membership was laid on the table.

It having been recommended by the Executive Committee that the Committee on the Drug Market, on Scientific Queries and the Business Committee, be made Standing Committees, on motion, the Business Committee were instructed to draw up an amendment to the Constitution making the above named Committees Standing Committees.

In accordance with the recommendations of the Executive Committee, the following resolutions were adopted:

Resolved, That the Executive Committee be directed to value and insure all the property of the Association and present the bills for insurance annually to the Treasurer for payment.

Resolved, That the Executive Committee be authorized to take such steps as the Chairman may deem best, to have all copies of the Proceedings, which may remain undistributed and unsold, returned to him by the next succeeding annual meeting, and present the bills of expenses incurred in effecting this to the Treasurer for payment.

A motion to increase the dues of Members was rejected.

A motion that prizes be given by the Association, as suggested by the Executive Committee, was rejected.

Mr. Parrish gave notice that to-morrow morning he would offer a resolution abolishing the power of the Executive Committee to elect members during the interim, as provided by the Constitution, Art II., Section 2.

Mr. Parrish spoke to the effect that the suggestions of the Committee on Membership, as applied to the acquirements and election of candidates, be adopted. Mr. Haviland opposed it. Much discussion was had on this subject, but the suggestions were finally rejected.

The Committee on Membership recommended a new form of Certificate of Membership. On motion a Committee of three were appointed to get up a new certificate. The chair appointed Messrs. A. B. Taylor, J. T. Shinn and Evan T. Ellis said Committee.

The Committee on Scientific Queries presented a report, action on which was deferred for the present.

There being now no especial business before the meeting, the answers to queries, proposed at the last meeting, were called for, and the reading of the essays was proceeded with.

QUERY 20th.—What are the best vessels in which to dispense ointments and cerates, combining fitness with elegance and accuracy? and what is the best plan for keeping this class of preparations in the dispensing shop, so as to retard their tendency to oxidation?

Mr. Thompson, of Baltimore, explained by letter why he had not answered this query. On motion it was continued to him.

QUERY 21st.—Maruta cotula and Leucanthemum vulgare are extensively introduced into the United States; can their flowers, as has been repeatedly asserted, be made available for destroying insects, and may they be regarded as a substitute for the so-called "Persian Insect Powder," which is derived from the nearly allied genus Pyrethrum?

It was partially answered by Mr. G. F. H. Markoe, who exhibited some dried specimens of Pyrethrum roseum. Mr. Markoe asked to have the same subject continued to him another year, which was granted.

QUERY 22d.—Pumpkin seeds have acquired some reputation as a remedy in tænia. Does their curative power reside solely in a fixed oil?—if so, what is the best process of extracting it, and of dispensing it for internal use?

Mr. C. A. Tufts, of Dover, N. H., who accepted this query, informed the Association that he had had no opportunity of trying any experiments, and asked to have the subject continued, which was granted.

QUERY 23d.—An essay on gas-heating apparatus adapted to the various purposes of the apothecary, so as to enable him to conduct his processes in or near the shop; which shall combine efficiency with economy; illustrated by figures or specimens.

Mr. Bedford, of New York, asked to have this subject continued to him, as he had been unable to finish his investigations in time for this meeting. The request was granted.

QRERY 24th.—Valerianate of Ammonia. The crystalline salt made by the process of B. J. Crew is apt to have adhering valerianic acid, which renders it disagreeably odorous and moist. What is the best means of obtaining a dry, neutral salt?

No answer was received from Mr. Bullock, to whom it was referred, in reply to this question, but he explained through Mr. Bedford why he had not answered it. This query was dropped.

QUERY 25th.—What is the best formula for Elixir of Valerianate of Ammonia, which shall be nearly free from valerianic odor and elegantly aromatized?

Not being answered, the subject was continued to Mr. J. Roberts, of Baltimore, by whom it was accepted at the last meeting.

QUERY 26th.—Is there a reliable test for the active resin from Cannabis sativa of the East Indies, whereby the genuineness of Extract of Indian Hemp may be satisfactorily and easily ascertained by the pharmaceutist?

Prof. Wm. Procter replied at length, in a paper read by him, which, on motion, was referred to the Executive Committee for publication.

Query 27th.—What is the best kind of press for the pharmaceutical laboratory, on a moderate scale, combining great power with simplicity and easy manipulation? and can the principle of the hydraulic press be employed?

Mr. R. H. Stabler, of Alexandria, Va., who accepted this query, replied to it in an excellent paper, and illustrated the subject with elaborate drawings. They were, on motion, referred to the Executive Committee for publication.

The reading of the answers to these queries called forth an animated discussion, rendering the meeting one of great interest.

An invitation having been received from Dr. O. M. Langdon, in charge of the Longview Insane Asylum, near Cincinnati, to visit that Institution, it was on motion accepted, and a proposition to leave this Hall to morrow morning at 11 o'clock, in conveyances provided by the Cincinnati College of Pharmacy, was agreed to.

It now being 11 o'clock, on motion the Association adjourned until 8½ o'clock to-morrow morning.

Friday—Fifth Session.

At 8½ o'clock the President called the meeting to order. The Minutes of the previous session, having been read and corrected, were adopted.

The subject of Amendments to the Constitution was introduced as unfinished business.

Dr. Squibb, from the Business Committee, introduced the following proposed amendment, relating to the duties of the Committee on the Drug Market, as Section 4th, Article IV., of the Constitution.

Section 4th.—The Committee on the Drug Market shall report annually the fluctuations in the supply and demand of imported Drugs, the variations in quality, and the adulterations and sophistications coming under their observation or reported to them by others; and they shall be authorized to report upon any adulterations and sophistications of immediate interest, through the Pharmaceutical journals, as soon as practicable after their discovery.

On motion this amendment was adopted.

Dr. Squibb of the Business Committee was requested to read separately certain Sections of the Constitution as they now are, and with the following proposed amendments:

Article II., Section 2d. Omit the words:

"Should an application occur in the recess" and all that follows them to the end of the Section.

The Amendment, on motion, was adopted.

Article IV., Section 2d, fourth line, omit the words, "the election of members in the recess."

The Amendment, on motion, was adopted.

Article IV., Section 3d, Omit all after the words, "in this country or in Europe."

The Amendment, on motion, was adopted.

Resolved, that Article IV. of the Constitution be amended to read as follows:

Section 1st. There shall be five Standing Committees elected annually: an Executive Committee—a Committee on the Progress of Pharmacy—a Committee on the Drug Market, each to consist of five members; a Committee on Scientific Queries, and a Business Committee, each to consist of three members.

On motion this amendment was adopted.

Section 4th. The Committee on Scientific Queries shall report near the close of each Annual Meeting a proper number of questions of scientific and practical interest, the answers to which may advance the interests of Pharmacy, and shall procure the acceptance of as many such questions for investigation as may be practicable, and report before the next succeeding Annual Meeting.

On motion the amendment was adopted.

Section 5th. The Business Committee shall be charged with the transmission of unfinished business from one Annual Meeting to another, and with collecting, arranging and expediting the business throughout the various sessions of the Annual Meetings.

On motion the amendment was adopted.

Professor Parrish now proposed that all the above resolutions be laid on the table, to be finally considered at the next annual meeting, but after some discussion withdrew his proposition, and the above changes and additions were adopted as a whole.

The resolution passed at the fourth session withholding the Proceedings from those in arrears, being in conflict with the Constitution, was objected to by Prof. Parrish. On motion of Mr. Moore the resolution was re-considered, and then laid on the table.

Objections were here made by Mr. Primm, of Caronondelet, to the unparliamentary manner of conducting the business of the meetings of the Association ; the objections were answered by Dr. Squibb, and not sustained by the Chair.

On motion, the resolution passed at the fourth session, relating to the expulsion of members in arrears, who return the Treasurer's bills unpaid, or attempt to resign after having received the current volume of Proceedings, &c., was re-considered, and afterwards laid on the table.

A motion was made to add three more names to the Committee to examine the Treasurer's books in regard to arrearages.

The motion was lost.

The following letter was received from Mr. Henry Sweet, Secretary of the Chicago College of Pharmacy:

CHICAGO COLLEGE OF PHARMACY,
Chicago, Sept. 21st, 1864.

To the Members of the American Pharmaceutical Association:

Gentlemen: At a meeting of this College, held Sept. 5th inst., it was unanimously voted, that your Association be invited to convene its next Annual Meeting in the rooms of the College of Pharmacy in this city.

In view of the great impulse which would be given thereby to Pharmaceutical interests in the north-west, and the manifold and mutual advantages arising therefrom, we would urge your acceptance of this invitation.

(Signed,) HENRY SWEET,
Secretary.

It was moved by the Business Committee, "That the invitation of the Chicago College of Pharmacy be received with the thanks of the Association, and that the Corresponding Secretary be directed to transmit to that College the explanation, that it was not deemed advisable to have two successive meetings in the Western States."

The motion was adopted.

Mr. Edwin R. Smith presented his credentials as a Delegate from the Chicago College of Pharmacy, and explained how it occurred that the letter of the Chicago College was so late in reaching the Association.

The reading of the Queries proposed at the last Annual Meeting, and their answers, was now resumed.

QUERY 28th.—Pure Tannic Acid being an odorless substance, is there an odorous principle in nutgalls that is found adhering to commercial tannic acid? or is the odor very commonly noticed in that substance due to impure ether used in its preparation?

Prof. Procter read an answer thereto, which, on motion, was accepted, and referred to the Executive Committee for publication.

QUERY 29th.—Owing to the proverbial difficulty in keeping garlic from growing and drying up to its detriment, and to the fact that garlic may be prepared so as to keep like other drugs, by the destruction of the vitality of the bulblets and their partial desiccation, it is queried: Can the latter process be advantageously applied to the commercial drug? and if so, how is it effected?

Mr. A. P. Sharp, of Baltimore, presented a paper on this subject, which was read, and, on motion, accepted, and referred for publication.

QUERY 30th.—What course should be adopted by Pharmaceutists, in view of the present state of the liquor market, as regards factitious Brandies and Wines?

Prof. Edward Parrish, to whom this query had been referred by vote of the Association, answered in a paper, which, after having been read, was referred to the Executive Committee for publication.

The following Queries having been carried over from a previous meeting of the Association, were disposed of as follows:

QUERY 1st.—Is there a principle in Chenopodium Anthelminticum analogous to Santonin? or does the medicinal power of this plant depend wholly upon its volatile oil?

No answer was received from Mr. Balmer, of Baltimore, to whom it had been continued.

QUERY 2d.—Is there a crystalline active principle in Capsicum, or does it owe its pungency to a soft resin?

Prof. Parrish read a report, detailing the results of a series of experiments. On motion, the paper was accepted and referred for publication.

QUERY 3d.—What is the best permanent solvent for Cantharidin, suitable for making a pharmaceutical preparation for blistering?

No answer from Prof. J. F. Moore, to whom it had been continued, being received, the query was dropped.

QUERY 4th.—Has Propylamin, as it exists in Ergot, any power to produce uterine contraction? and if so, does commercial Propylamin, from herring pickle, possess a like power?

This query had been continued to Prof. Robert P. Thomas, now deceased. No answer was received.

QUERY 5th.—What is the most convenient and economical arrangement by which the Apothecary can quickly and reliably ascertain the strength of acid and alkaline liquids for pharmaceutical preparations?

No answer being received from Dr. W. H. Pile, of Philadelphia, the query was dropped.

QUERY 6th.—Is the process of Dialysis applicable in Pharmacy? If so, in what instances may it be employed?

Prof. Procter answered in a very interesting paper, which, on motion, was accepted and referred for publication.

QUERY 7th.—What are the methods of detecting the adulterations of Olive Oil?

This had been continued to Mr. Winter, of Baltimore, but no answer was received, and the subject was dropped.

A paper on Southern Prickly Ash Bark, written by Prof. Dr

R. Bridges, was presented in answer of a query referred to the late Prof. R. P. Thomas, in 1862, and on motion was referred to the Executive Committee, for publication: and the thanks of the Association were tendered to the author.

A volunteer paper was presented by Mr. T. S. Wiegand, on a Balance for the Apothecary; as also the following through Mr. Maisch:

Observations on Oleum Æthereum, by C. Lewis Diehl,
On the Quality of Sherry Wine,
On French Brandy and Whisky,
On the Manufactures of the U. S. A. Laboratory, at Philada.,
On Some Medicinal Spirits;

also a paper from Prof. Parrish, on his method of teaching Practical Pharmacy.

On motion of the Business Committee, the following resolution was adopted:

That the papers voluntarily contributed to this meeting of the Association be referred to a Committee of two members, who shall examine these papers and forward them to the Executive Committee, with a concise report, giving the reasons why they should or should not be published in the Proceedings; and that the Executive Committee be guided in their publication by this report, the report to be also published.

The President appointed Dr. E. R. Squibb and Prof. F. F. Mayer as this committee.

The Chairman of the Committee to prepare queries for investigation, now read the following report, which was adopted and referred for publication:—

Query 1st—The seeds of Cimicifuga Racemosa are numerous and easily obtainable. What are their characteristic properties and chemical constituents?

Accepted by E. C. Jones, of Philadelphia.

Query 2d,—Gillenia trifoliata and stipulacea are found extensively diffused throughout the United States. Their roots are known to resemble Ipecacuanha in medical properties. Could they be made to substitute that costly drug, and would the Fluid Extract, Wine and Syrup of Gillenia be available for use as substitutes for the corresponding preparations of Ipecacuanha?

Accepted by Albert E. Ebert, of Chicago.

Query 3d.—The Salts of Sanguinarina are employed to a considerable extent in some of the western cities. How do they compare with the Galenical preparations of the root, and what are their best combinations and modes of administration?

Accepted by Prof. R. Barthalow, of Cincinnati.

Query 4th.—Which process for Camphor Water is to be preferred, that of the U. S. Pharmacopœia or of the British Pharmacopœia?

Accepted by George F. H. Markoe, of Boston.

Query 5th.—Could the Poppy be profitably cultivated in any part of the United States, for the production of Opium and Poppy Seed Oil?

Accepted by Edwin R. Smith, of Monmouth, Ill.

Query 6th.—Can Citric Acid be profitably produced in this country, from Currants, Goosberries or Tomatoes?

Accepted by H. N. Rittenhouse, of Philadelphia.

Query 7th.—Can Peach Kernels be profitably used to procure the fixed and volatile Oil of Almonds?

Accepted by E. S. Wayne, of Cincinnati.

Query 8th.—Commercial Honey is much adulterated with or substituted by artificially prepared Syrup. How can the fraud be detected?

Accepted by E. S. Wayne, of Cincinnati.

Query 9th.—What is the best strength of Alcohol for the extraction of the several officinal Gum Resins, with a view to the production of eligible liquid representatives of the drugs?

Accepted by P. W. Bedford, of N. York.

Query 10th.—A good permanent preparation of Pumpkin Seeds, (Pepo, U. S. P.,) is a desideratum, with a view to its convenient use as a Tænifuge remedy. What is the best, with a formula?

Accepted by J. S. Higgins, of N. York.

Query 11th.—What is the most convenient form of apparatus adapted to common use, for regulating the temperature at or below 160°, 140°, and 120° respectively, as directed in the evaporation of some of the officinal extracts?

Accepted by P. W. Bedford, of N. York.

Query 12th.—What are the causes of the decomposition of the Syrups and other Vegetable solutions, the best precautions to prevent it, and the best means of restoring such preparations which have deteriorated?

Accepted by E. S. Wayne, of Cincinnati.

Query 13th.—In what preparations may Glycerin be used to prevent the deposition of apotheme? What is the minimum quantity that will answer the purpose, and will such preparations bear dilution?

Accepted by A. B. Taylor, of Philadelphia.

QUERY 14th.—How far is Glycerin capable of substituting Alcohol in extracting drugs for pharmaceutical preparations? Would such substitution be economical?

Accepted by W. J. M. Gordon, of Cincinnati.

QUERY 15th.—Is the cultivated Valerian, produced in New England, of equal quality with that imported from England and Germany, and are there any characteristic differences by which they may be distinguished?

Accepted by G. F. H. Markoe, of Boston.

QUERY 16th.—The so-called Naphtha or Benzine derived from the rectification of coal oil is very variable in properties. How far do these properties fit it for use in Pharmacy, and what are the relations, if any of specific gravity and solubility among these hydro-carbons?

Accepted by A. P. Sharp, of Baltimore.

QUERY 17th.—What indigenous articles of the Materia Medica can be properly and profitably cultivated?

Accepted by W. S. Merrill, of Cincinnati.

To this list the following queries were added, as being continued to the members by whom they were accepted at the last meeting, in accordance with the resolution adopted at the Third Session.

QUERY 18th.—Fermentation and cryptogamic vegetation viewed as destructive agents in connection with drugs and pharmaceutical preparations. What are the best means of avoiding the former, and arresting the growth of the latter without injury to the drugs and preparations?

Continued to J. J. Scattergood, of Philadelphia.

QUERY 19th.—Stramonium is abundant in the United States, and its alkaloid Daturia is alleged to be identical with Atropia in Belladonna. If this be true, in what relative proportions do these plants contain this principle, and why may not Stramonium be used as a source of Atropia?

Continued to Prof. F. F. Mayer, of New York.

QUERY 20th.—It is now known that Storax is a production of Liquidambar Orientale, a tree closely resembling L. styraciflua of the United States. It is also well known that our indigenous Liquidambar yields in warm latitudes a balsamic exudation, analogous to storax in odor and to tolu in consistence, and contains cinnamic and benzoic acids. Query.—Will this tree yield a product identical, or nearly so, with commercial storax, if it is treated in the same manner?

Continued to Prof. Wm. Procter, Jr., of Philadelphia.

Query 21st.—It has been stated that the poisonous properties of Rhus toxicodendron reside in a volatile alkaloid. Is this true? Is this alkaloid dissipated when the leaves are dried? Can it be isolated in a state fit for medical use, or can the properties of the leaves be preserved in some form as a pharmaceutical preparation?

Continued to J. M. Maisch, of Philadelphia.

Query 22d.—What are the best vessels in which to dispense ointments and cerates, combining fitness with elegance and accuracy; and what is the best plan for keeping this class of preparations in the dispensing shop, so as to retard their tendency to oxidation?

Continued to Wm. S. Thompson, of Baltimore.

Query 23d.—Maruta cotula and Leucanthemum vulgare are extensively introduced into the United States; can their flowers, as has been repeatedly asserted, be made available for destroying insects, and may they be regarded as a substitute for the so-called "Persian Insect Powder," which is derived from the nearly allied genus Pyrethrum?

Continued to G. F. H. Markoe, of Boston.

Query 24th.—Pumpkin seeds have acquired some reputation as a remedy in tænia. Does their curative power reside solely in a fixed oil? If so what is the best process for extracting it and of dispensing it for internal use?

Continued to A. Tufts, of Dover, N. H.

Query 25th.—An essay on gas heating apparatus adapted to the various purposes of the apothecary, so as to enable him to conduct his processes in or near the shop, which shall combine efficiency with economy; illustrated by figures or specimens.

Continued to P. W. Bedford, of New York.

Query 26th.—What is the best formula for Elixir of Valerianate of Ammonia, which shall be nearly free from valerianic odor and elegantly aromatized?

Continued to Joseph Roberts, of Baltimore.

Mr. Parrish called the attention of members to a new style of scales for Apothecaries' use, arranged so as to dispense with weights. The weight of the article weighed is read off on a graduated scale, containing both avoirdupois and Troy denominations. The Executive Committee were ordered to have a drawing made for publication in the Proceedings.

On motion of the Business Committee it was *Resolved*, That the thanks of this Association be tendered to Mr. Larz.

Anderson, and Dr. O. M. Langdon, for their kind invitations to visit the establishments over which they preside, and that the Corresponding Secretary be directed to carry into effect this resolution.

Resolved, That the thanks of the Association be tendered to the Cincinnati College of Pharmacy, for the attention and hospitality shown to the Association at this meeting.

The following Committees were announced by the Chair for the ensuing year:

Committee on Scientific Queries.—Wm. Procter, Jr., Chairman, Philadelphia; E. S. Wayne, Cincinnati; F. Stearns, Detroit; R. H. Stabler, Alexandria, Va.

Committee on the Drug Market.—F. F. Mayer, New York, Chairman; W. S. Thompson, Baltimore; S. M. Colcord, Boston; E. L. Massot, St. Louis; Fred. Stearns, Detroit.

Business Committee.—E. R. Squibb, Brooklyn, Chairman; Robert R. Kent, Boston; George C. Close, Brooklyn.

On motion of Mr. Primm, of Caronondelet, Mo., the following resolution was adopted:

Resolved, That the thanks of this Association are hereby tendered to the President, Secretary, Treasurer, and retired Officers, for the able manner in which they have discharged the duties of their respective offices.

The minutes of all the previous sessions having been read, they were unanimously adopted.

On motion, the Association adjourned, to meet, in accordance with the resolution previously adopted, in Boston, Mass., on the first Tuesday in September, 1865, at 3 o'clock.

HENRY N. RITTENHOUSE, *Rec. Sec.*

At a meeting of the members who visited Longview Asylum, near Cincinnati, the following resolution of thanks was unanimously adopted:

Resolved, By the members of the American Pharmaceutical Association, and their friends of both sexes, assembled at Longview Asylum on this anniversary occasion, that we extend to Dr.

Oliver M. Langdon, and the Steward and Matron of the Asylum, our cordial acknowledgments for their generous hospitality, and shall carry to our distant homes a lively recollection of the Institution and its Officers.

To the Executive Committee of the American Pharmaceutical Association.

The Committee appointed by the Association to examine volunteer papers which could not be read at the late Annual Meeting, begs leave to report, that after a careful examination of the papers, it is recommended that they all be published, with the exception of one, which the author of it has withdrawn in consequence of some errors he discovered in it, which errors could not well be corrected in time for publication.

These papers all contain important and useful information, and as contributions to the general stock of that kind of knowledge, which it is the aim of the Association to stimulate and encourage, they deserve the thanks and commendation of the Association, even though they should contain opinions and recommendations, which might not receive the endorsement of the Association. In one paper,—the only one which this Committee finds it incumbent upon them to notice,—the author, after a fair and legitimate criticism upon the officinal medicated waters and spirits, and after offering what he considers to be improved formulas for those which are, in his judgment, at fault, recommends his labors and evidence for the consideration of the future Committees of Revision of the Pharmacopœia. Thus far this Committee, acting for the Association, are in perfect accord with the character and objects of this paper, but its author goes farther, and publishes and recommends his formulas for immediate adoption, and offers the example in departing from the officinal standard, of what should be the highest pharmaceutical authority in the country. That is, he states that his formulas have been adopted in preference to those of the Pharmacopœia in the U. S. Army Laboratory at Philadelphia by his recommendation, and states also that the preparations are preferred to all others in army practice, as far as this has been enquired into.

This Committee would have greatly preferred, in behalf of the Association, that this author should have thrown his deservedly great and important influence in favor of a strict adherence to the Pharmacopœia, and be satisfied to entrust his evidence and arguments to the future Committees of Revision. Although it has been no part of his object to disregard the Pharmacopœia, much less to disparage its intentions, or weaken its authority, yet he has, nevertheless, in the judgment of this Committee, deliberately departed from both the letter and the spirit of the officinal standard, and publishes his example for the guidance of others.

These remarks appear to be particularly called for in view of the belief that this paper "On Some Medicinal Spirits" could not have been read before the Association, without calling forth some such criticism, which, whether just or unjust, must have appeared in the Minutes of the Proceedings, and thus have accompanied its publication.

The papers recommended for publication, and herewith handed to the Executive Committee, are as follows:—

1st. A Systematic Course of Study and Practice for Students of Pharmacy, by Edward Parrish.

2d. On the Assay of French Brandy and Whisky, by John M. Maisch.

3d. On the Quality of Sherry Wine of our Commerce, and its Assay, by John M. Maisch.

4th. On Some Medicinal Spirits, by John M. Maisch.

5th. Plan and Description of Balance for Apothecaries' Uses, by Thos. S. Wiegand, of Philadelphia.

6th. Practical Observations on the Manufacture of Oleum Æthereum, by C. Lewis Diehl, Jr,

Brooklyn, November 10*th*, 1864.

E. R. Squibb, of Brooklyn,
F. F. Mayer, of New York. } *Committee.*

REPORTS OF COMMITTEES.

REPORT ON THE PROGRESS OF PHARMACY.

The following Report on the Progress of Pharmacy has been compiled from the accounts of the late discoveries and improvements appearing in various Journals during the last six months of 1863, and the first six months of 1864.

The Committee have not been able to consult all of these periodicals, of which the aggregate number devoted to Pharmacy and the allied branches published in this country and Europe, is quite large; and the Report is consequently not so complete as could have been desired. Most, however, of the more important observations, it is believed, have been referred to. The following list includes the publications that have been particularly examined:—

American Journal of Pharmacy, Philada.,	*A. J. Ph.*
American Druggists' Circular, New York,	*A. D. Circ.*
American Journal of Medical Sciences, Phila.,	*A. J. Med. Sci.*
American Journal of Science and Arts,	*A. J. Sci.*
Pharmaceutical Journal and Trans., London,	*Ph. J. & Trans.*
Chemical News, London,	*Ch. N.*
Journal of the Chemical Society, London,	*J. Ch. Soc.*
Journal de Pharmacie, Paris,	*J. de Ph.*
Vierteljahresschrift für praktische Ph., Munich,	*Vierteljh. Ph.*
Neues Jahrbuch für Pharmacie, Speyer,	*N. Jahrb.. Ph.*
Zeitschrift für Analytische Chemie, Wiesbaden,	*Zeits. An. Ch.*

A list of works published on subjects relating to Pharmacy within this period, in the English, French and German languages, is appended.

The year just closed affords several features of interest in the general history of Pharmacy. The gradual adoption of the improved processes of the revised Pharmacopœia, and the introduction of its new preparations, are slowly effecting considerable changes in the daily routine of our operations. The recent appearance of the new British Pharmacopœia, and the Seventh Edition of the Prussian Pharmacopœia, likewise, form well marked eras in the Pharmacy of these countries. The elaborate discussions which have preceded the publication of these authoritative standards, and the multitudinous reviews, criticisms and suggestions which they have given rise to, have contributed much valuable information to our stock of pharmaceutical knowledge, and are evidences of the general interest taken in bringing these conservative works to a level with the present advanced condition of the sciences.

In our own country, the progress of Pharmacy continues to be much affected by the disturbed condition of public affairs, and the restricted commercial intercourse arising from the prolonged continuance of war. In the Northern States, these evils have been felt in but a comparatively slight degree. The Colleges of Pharmacy have continued their instructions in their respective neighborhoods, (as will appear more in detail by the Report of the Corresponding Secretary), and the Journals devoted to these subjects have been issued continuously. The rapid increase in the market value, however, of all kinds of drugs, the actual scarcity of several of them, both of domestic and foreign production, and the strict compliance with the regulations of the Revenue Laws in reference to the sale of many articles prepared by druggists or kept by them for sale, have impressed a great change upon the financial aspects of our business, and combined to render this period an eventful one in the history of Pharmacy of this country. This unusual state of affairs, the cause of which we trust will be of but temporary duration, will not, we hope, have passed away, without having, meanwhile, tended to develope and bring into more general notice the valuable properties of our indigenous remedies, as substitutes as far as their merits warrant, for those derived from foreign sources.

The recent appearance of the national Pharmacopœia of Great Britain, superseding the long established distinct works of the London, Edinburgh and Dublin Colleges, is to be noted as an achievement of great value. Although, as has been abundantly shown by the pharmaceutists of that country, the British Pharmacopœia, as it now stands, is far from faultless, yet much is hoped from its general adoption in preventing the diversity of similar preparations prevailing in different sections, the inconvenience and sometimes danger resulting therefrom to the public, and a more thorough concurrence and union of the hitherto somewhat diverse pharmaceutical interests of that country.

Another feature of considerable influence upon the future progress of Pharmacy in Great Britain is the growing disposition manifested among the chemists and druggists—a class to which belongs in great measure the sale of drugs, medicines and similar articles—to unite with the members of the Pharmaceutical Society in endeavoring to obtain legislation compelling the professional education and examination of those who in future may undertake to carry on the business of an apothecary. A bill has been prepared for the action of Parliament, which has received the support of numerous members of these distinct classes, restricting the right to compound and dispense prescriptions to those only who shall have complied with the necessary official examinations, and be duly certified as competent to perform the same. It being understood that those already in business at the time of the passing of the Act are to be considered as qualified upon simple registration. By these provisions it is hoped that the public health may be more carefully guarded, the reputation of the dealer in drugs assured, and the seed sown for a succession of a body of intelligent apothecaries interested in the advancement of their vocation as a profession.

It will no doubt interest many of our members to know that the Pharmaceutical Conference, the general body of all those occupied in the sale of drugs and medicines in Great Britain, to which at our last meeting this Association extended the hand of friendly greeting, having organized at their preliminary meeting last fall, have concluded to hold their second meeting simultaneously with that of the British Association for the Advancement of Science, at Bath, on the 14th of the present month.

While the druggists of England are thus voluntarily invoking governmental aid in elevating their body in professional standing, strong efforts have been making in France, where the functions and positions of the "pharmacien" are recognised and protected by law, to obtain entire freedom from official restriction, and to secure for the apothecary the same liberty that is accorded to any dealer in merchandize. This movement, however, it must be remarked, does not appear to be favored, in its present shape, by the majority of the French pharmaceutists, and has been strongly opposed by Guibourt and others of eminent standing, as likely "to open a door for the pretensions of the quack, the errors of the ignorant, and the evil designs of the unscrupulous, to the injury of public health, and the discouragement of the well-qualified pharmaceutist."

The researches undertaken under the direction of the Société de Pharmacie of Paris in reference to the still pending revision of the French Codex, have been continued during the past year, and reported upon in the Journal de Pharmacie. Several suggestions extracted from these papers are contained in the following pages.

In Germany, where a liberal professional education and a strict examination has long been made obligatory by law upon the candidate for the title and privileges of the apothecary, there exists a body of investigating pharmaceutists, whose labors continue to contribute much towards the increase of pharmaceutical knowledge, as indicated by the large number of the various Journals and separate treatises devoted to these subjects, which are yearly issued from the press. Here, also, essential alterations affecting the legal status of pharmaceutists as a class are advocated. The distinction, in favor of the apothecary, made by the government in consideration of the prolonged preparation which is to fit him as an auxiliary custodian of the public health, and also an additional provision protecting his pecuniary interests by the regulation of the number of dispensing establishments, according to the population of the districts, are features which are not universally regarded at the present time in that country as beneficial to the interests of Pharmacy. The question is now debated with some earnestness among our German cotemporaries, whether greater good both to the public and the profession at large would not result from the abolition of the existing protective and police regulations in regard to the sale and price of medicines, and the admittance of a free and unrestrained competition in the business, among those, however, exclusively, who shall have been suitably qualified for it by passing through the necessary examinations.

The Pharmaceutical Association of Buenos Ayres, under whose auspices the *Revista Farmaceutica* has been published for some time past, has lately obtained the official sanction of the government; and under this encouragement has taken measures towards its firmer establishment as a permanent body, and has founded a school of Pharmacy.

In the island of Jamaica, in some sections of which considerable annoyance has resulted from the sale of worthless remedies, a bill has lately been presented to the legislative body, providing for the future regulation of the pharmaceutical interests, the exclusion of all but those duly qualified from the business of an apothecary, and giving authority for the inspection at intervals of the drugs, &c., offered for sale, or kept in the stores, with a view to the destruction of those of inferior quality.

In regard to the condition of Pharmacy, in Switzerland, Russia and Belgium, each of which countries is represented by a pharmaceutical Journal, the Committee have learned nothing during the past year.

In classifying the materials which have been collected for the following Report, the main divisions of the scientific arrangement proposed by Prof. J. M. Maisch in his Report on the Progress of Pharmacy, for 1861 and 1862, and followed by Prof. F. F. Mayer in that of 1863, have been adhered to. In alluding to the observations which have been made in the various fields of research in which the Pharmacy of the present day is interested, brief abstracts have in some cases been attempted; but in many others but little more could be done than simply to refer to the papers by title, with the volume and page of the Journals in which they may be found. For convenience of reference, and as a guide to the arrangement adopted, a schedule containing the chief heads of the divisions of the Report is appended.

The Committee acknowledge their obligation to Prof. Wm. Procter, Jr., of Philadelphia, and Prof. F. F. Mayer, of New York, for the use of several of the foreign Journals kindly placed at their disposal.

On behalf of the Committee.

George J. Scattergood, *Chairman.*

RECENT PUBLICATIONS RELATING TO PHARMACY.

BOOKS IN THE ENGLISH LANGUAGE.*

First Outlines of a Dictionary of Solubilities of Chemical Substances. By Frank H. Storer. Part Second and Part Third (completed). Cambridge: Lever & Francis.

A Comprehensive Medical Dictionary, containing the Pronunciation, Etymology and Signification of the terms made use of in Medicine and the kindred sciences, with an Appendix comprising a complete list of all the more important articles of the Materia Medica, arranged according to their medicinal properties; also, an explanation of the Latin terms and phrases occurring in Anatomy, Pharmacy, &c. By J. Thomas, M. D. Philadelphia: J. B. Lippincott & Co.

A Treatise on Pharmacy designed as a text-book for the student, &c., and as a guide for the physician and pharmaceutist, &c. By Edward Parrish. Third edition. Thoroughly revised and improved, with important additions. Philadelphia: J. B. Lippincott & Co.

British and London Pharmacopœias compared, with a posological table. By George Barber. 16mo. Liverpool: Howell.

British Pharmacopœia, published under the direction of the General Council of Medical Education and Registration of the

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* In inserting the following lists, the Committee would particularly call attention to the first three works, as well worthy, from their general contents, and the painstaking labor which has been bestowed upon them, of the notice of the American pharmaceutist.

United Kingdom, pursuant to the Medical Act, 1858. 18mo. edition.

Elementary Text-Book of the Microscope; including a description of the methods of preparing and mounting objects, &c. Post 8vo. By J. W. Griffith, M. D., F. L. S. Van Woorst: London.

Essentials of Materia Medica and Therapeutics. Second Edition, revised and much enlarged. Post 8vo. By Alfred Baring Garrod. M. D., F. R. S. London: Walton.

Flora of Ulster and Botanists' Guide to the North of Ireland. 8vo. By George Dickie, M. D., F. L. S. Belfast: Atchison.

Lessons in Elementary Botany. The part on Systematic Botany based on material left in manuscript by the late Prof. Henslow. 18mo. By Daniel Oliver, F. R. S., F. L. S. London: Macmillan.

Complete Treatise on Perfumery. By M. P. Prudal. Translated from the French, with extensive and important additions, by Prof. H. Dussance, Philadelphia.

Introduction to the use of the Mouth Blowpipe: to which is added a description of the blowpipe characters of the more important minerals. By Dr. T. Scheerer. Edited by H. F. Blanford. Second Edition. 8vo. London: Williams & Norgate.

Cultivated Ferns; or, a Catalogue of Exotic &c. Ferns cultivated in British Gardens. By John Smith, A. L. S. 12mo. London: Dulau.

Preparation and Mounting of Microscopical Objects. By Thomas Davies. 8vo. London: Hardwicke.

Half Yearly Abstract of Medical Sciences. By Ranking & Radcliffe. Vol. 38. London: Churchill.

Elements of Physics or Natural Philosophy. Sixth Edition. Part 1. By N. Arnott, M. D., T. R. S. London: Longman.

The Useful Plants of India with Botanical Descriptions. Notices of their economical Value in Commerce, Medicine and the Arts. By Major Heber Drury. 8vo. Madras, 1858.

Researches on the Solar Spectrum. Second Part. By G. Kirchhoff. Translated by H. E. Roscoe, B. A., Ph. D. 4to. London: Macmillan.

The Geographical Distribution of Animals and Plants. By Chas. Pickering. 4to. Boston.

Sowerby's English Botany; or, Colored Figures of British Plants. Third Edition, enlarged and revised. Vol. 2. 8vo. London: Hardwicke.

Year Book of Facts in Science and Art for 1864. By John Timbs (F. S. A.) 8vo. London: Lockwood.

Prescriber's Analysis of the British Phrmacopœia. 32mo. By J. Nevins Birkbeck, M. D. London: Churchill.

Botany for Novices. L. E. B. Feap. 8vo. Rugby: Crossley & Billington.

British Conchology, with plates. Vol. 2. By John Gwyn, F. R. S., &c. 8vo. Van Woorst.

Metallurgy, the Art of extracting Metals from their Ores, and adapting them to various purposes of manufacture. Iron and Steel, with illustrations. 8vo. By John Percy, M. D., F. R. S. London: Murray.

A system of Instruction in Qualitative Analysis. By C. R. Fresenius. Edited by J. L. Bullock. London: Churchill.

Elements of Chemistry, Theoretical and Practical. Part 1. Third Edition, with additions (600 pp.) By William A. Miller. London: Parker & Son.

Petroleum and its Products; an account of the history, origin, composition, properties, uses and commercial value, &c., of petroleum; the methods employed in refining it, and the properties, uses, &c., of its products. By A. Norman Tate. Liverpool: Greenwood.

Coffee and Chicory; their Culture, Chemical Composition, &c. 12mo. By P. L. Simmonds. London.: Simpkin, Marshall & Co.

British and Garden Botany. Post 8vo. L. H. Grindon. London: Routledge.

Dictionary of Chemistry, and the allied branches of other Sciences. Founded on that of the late Dr. Ure. In 4 vols. Vol. 2. 8vo. London: Longman.

The Field and Garden Vegetables of America, containing full descriptions of nearly eleven hundred species and varieties; with directions for propagation, culture and use. By T. Burr, Jr. New York.

Memoranda on Poisons. By. T. H. Tanner, M. D., F. L. S. From the last London Editions. 24mo. Philadelphia: Lindsay & Blakiston.

Report of the Jurors of the International Exhibition. Class II, Section A. Chemical Products and Processes. By Dr. A. W. Hofmann : London.

FRENCH BOOKS.

Formulaire raisonné des Médicaments Nouveaux et des Médications Nouvelles. Par O. Reveil. 12mo.

Chimie appliquée à la Physiologie Animale, à la Pathologie et au Diagnostic Médical. 8vo. Par Schützenberger.

L' Etudiant Micrographie. Traité pratique du Microscope. Par Chevalier. 12mo.

Histoire Naturelle des Equisetum de France. Par J. Duval. 4to.

Dictionnaire général des Sciences Théoriques et Appliquées. Premiére partie A to C. 8vo. Par Deschanel. Privat et Focillon.

Histoire de la Botanique, et Plan des Familles Naturelles des Plantes. Deuxiéme éd. Roy. 8vo. By M. Adamson.

Des Couleurs et leurs Applications aux Arts Industriels à l'aide des Cercles Chromatiques. 4to. Par E. Chevreul.

De la Pharmacie. Par M. Fumouze. Paris. Chamerot.

Instruction pratique sur l'analyse spectrale. Par L. Grandeau. Mallet-Bachelier. Paris.

De l'organization de la pharmacie dans les principaux états de l' Europe par C. Labelonye. Paris. Asselin.

Remarques sur la préparation et l' usage de l'hyposulfite de chaux cristallisé et des sulfites de soude et de magnesia. Procédé pour la préparation du sulfate d' antimoine cristallisé. Par J. Laneau. Bruxelles. Tircher & Manceaux.

Expériences sur l' aëration des eaux et observation sur le rôle comparé d' acide carbonique, de l' azote et l' oxygéne dans les eaux douces potables; propriétés physiques et chimiques de ces eaux. Par J. Lefort. Paris. Balliére et fils.

Note historique sur l' ergot de blé. Par J. M. Grandelément. Clement-Ferrand. Veysset.

Essai sur l' aconit. Thése. Par G. Hahn. Strassbourg, impr. Silbermann.

GERMAN BOOKS.

Analyse d. Kaiser-Brunnens u. d. Ludwigs-Brunnens zu Homburg vor der Höhe. Von Prof. Dr. R. Fresenius. Wiesbaden, Kreidel's Verl.

Graham-Otto's ausführliches Lehrbuch der Chemie. 4. umgearb. Aufl. Mit in den Text eingedr. Holzst. 1. Bd.: Lehrbuch der physikalischen u. theoretischen Chemie, v. H. Buff, H. Kopp u. F. Zamminer, Proff. 2 Abtheilgn. Braunschweig, Vieweg & Sohn.

Lehrbuch der Chemie f. den Unterricht auf Universitäten, technischen Lehranstalten u. f. das Selbststudium bearb. Von Prof. Dr. E. F. Gorup-Besanez. Braunschweig. Vieweg & Sohn.

Die officinellen Gewächse europäischer botanischer Gärten, insbesond. die d. Königl. botan. Gartens der Universität Breslau. [Aus dem Archiv der Pharmacie 1863 abgedr.] Von Prof. Dr. H. R. Göppert. Hanover, Hahn.

Jahresbericht üb. die Fortschritte der Agrikulturchemie m. besond. Berücksicht. der Pflanzenchemie u. Pflanzenphysiologie. 5. Jarhg. 1862–63. Mit e. vollständ. Sach- u. Namen-Register. Von Dr. R. Hoffman. Berlin, 1864. Springer's Verl.

Die offizinellen Gewächse der preussischen Pharmacopöe f. Mediciner, Pharmaceuten u. Droguisten bildlich dargestellt u. beschrieben. Von Dr. M. Hoffman. Jena. Mauke.

Handbuch der chemischen Technologie. In Verbindg. m. mehren Gelehrten u. Technikern bearb. u. hrsg. von Prof. Dr. P. Bolley. Braunschweig. Vieweg & Sohn.

Vergleichende Uebersicht zwischen der 6. u. 7. Ausg. der Preussischen Pharmacopöe. Von B. Hirsch. Berlin. Decker.

Handwörterbuch der reinen u. angewandten Chemie. Begründet von Dr. J. v. Liebig, Dr. J. C. Poggendorff u. Dr. Fr.

Wöhler, Proff. Bearb. in Verbindg. m. mehren Gelehrten u. red. von Dr. H. v. Fehling u. Dr. H. Kolbe, Proff. 8. Bd. Braunschweig. Vieweg & Sohn.

Die chemische Analyse. Ein Leitfaden f. die qualitative u. quantitative Analyse. Von Dr. T. Petersen. Berlin, 1864. Springer's Verl.

Ausführliches Lehrbuch der organischen Chemie. Von Prof. Dr. H. Kolbe. 2. Bd. Braunschweig. Vieweg & Son.

Kommentar zu der 7. Ausg. der Pharmacopöa Borussica m. besond. Berücksicht. der neusten Pharmakopöen des Königr. Hannover u. des Kurfürstenth. Hessen. Von Dr. H. Hager. Lissa, Günther's Verl.

Canstatt's Jahresbericht üb. die Fortschritte in der Pharmacie u. verwandten Wissenschaften in allen Ländern im J. 1862. Red. v. Prof. Dr. Scherer, Prof. Dr. Virchow u. Dr. Eisenmann. Verfasst v. Prof. Dr. Clarus, Dr. Eisenmann, Dr. Eulenburg, etc. 12. Jahrg. Würzburg. Stahel.

Jahresbericht über die Fortschritte u. Leistungen der chemischen Technologie u. technischen Chemie. Hrsg. v. Prof. Dr. Johs. Rud. Wagner. 8. Jahrg. 1862. Leipzig. O. Wiegand.

Regnault-Strecker's kurzes Lehrbuch der Chemie. Braunschweig. Vieweg & Sohn.

Handbuch der Pharmacognosie. Von. Prof. Dr. A. Wiggers. Göttingen, 1864. Bandenhoeck & Ruprecht's Verl.

Praktische Uebungsbeispiele in der quantitativ-chemischen Analyse, m. besond. Rücksicht auf die Werthbestimmg. landwirthschaftl. u. techn. Produkte. Von Prof. Dr. A. Vogel. Erfurt, Körnersche Buchh.

Das Cyan u. seine anorganischen Verbindungen nebst dem Mellon. Von Prof. Dr. Otto Kühn. Eine Zusammenstellg. alles darüber bekannt geword. Leipzig. Abel.

Über eine neue Klasse organischer Stickstoffverbindungen. Von Prof. Dr. A. Strecker. Tübingen.

Repertorium der Chemie m. besond. Rücksicht auf Physiologie, Pathologie u. Pharmacologie f. Mediciner. Von J. C. Schik. Prag, 1864. Kuranda.

Atlas aller in den neuesten Pharmacopœen Deutschlands aufgenommenen officinellen Gewächse nebst Beschreibg. u. Diagnostik der hierher gehör. Pflanzen in pharmacognost. u. pharmacolog. Hinsicht. Von Prof. Dr. Artus. Leipzig, 1864. Baensch, Verl.

Untersuchungen üb. metallhaltige Anilinderivate u. üb. die Bildung d. Anilinroths. Von Hugo Schiff. Berlin, 1864. Springer's Verl.

Beitrag zur Kenntniss der Kamphene. Notizen über das Rosenöl. Von Richard Baur. Tübingen.

Die chemisch-technischen Mittheilungen der neusten Zeit. Die Jahre 1862–63. V. L. Elsner. Berlin.

Chemisch-technisches Repertorium, 1862. 1. Halbjahr. Von Emil Jacobsen. Berlin. Gærtner.

Pharmaceutisches Jahrbuch. 111. Bändchen. Berlin. J. Springer.

Jahresbericht über die Fortschritte der reinen pharmaceutischen und technischen Chemie, &c. Herausgegeben von H. Kopp u. H. Will, &c. Für 1862. Giessen. Ricker.

Pharmaceutischer Kalender für Nord-Deutschland auf das Jahr 1864. Berlin. J. Springer.

Untersuchungen über das Sonnenspectrum und die Spectren der chemischen Elemente. 2. Theil. V. G. Kirchoff. Berlin. F. Dümmler.

Commentar zur Preussischen Pharmacopœe nebst Uebersetzung des Textes. 3. umgearbeitete Auflage. Nach der 7. Auflage der Pharmacopœa Borussica bearbeitet. Von F. Mohr. Braunschweig. Vieweg & Sohn.

Der Weinstock und der Wein. Praktisch-wissenschaftliche Abhandlung über die Zucht des Weinstocks and die Bereitung des Weins. Von F. Mohr. Coblenz. Hölscher.

Darstellung u. Beschreibung sämmtlicher in der Pharmacopœa Borussica aufgeführten officinellen Gewächse, od. der Theile u. Rohstoffe, welche v. ihnen in Anwendg. kommen, nach natürl. Familien. Von Prof. Dr. O. Berg und C. F. Schmidt. Leipzig, 1863.

Gmelin's, L., Handbuch der Chemie, [Fortsetzung] in Verbindg. m. den Dr. Dr. Carius, Hallwachs, H. Ritter u. Schwanert bearb. u. hrsg. v. Lehr. Dr. Karl Kraut. 7. Bd. 2. Abth. Heidelberg, 1863. K. Winter. Auch unter dem Titel.

Handbuch der organischen Chemie [Fortsetzung] in Verbindg. m. den Dr. Dr. Carius, Hallwachs, H. Ritter, u. Schwanert bearb. u. hrsg. v. Lehr. Dr. Karl Kraut. (4. Bd. 2. Abth.) Ebd. 1863.

Grundriss der Chemie. 2 Thle. Von F. Wöhler. Berlin. Duncker & Humblot.

Verbindungen d. Siliciums m. Wasserstoff. Von F. Wöhler. [Aus den Abhandlgn. d. k. Ges. d. Wiss. zu. Gött.] Göttingen. Dieterich.

Anatomischer Atlas zur pharmaceutischen Waarenkunde. Von Prof. Otto Berg. Berlin. Gærtner.

Preparata chemica et pharmica composita in pharmacopœæ Borussicæ editionem vii non recepta, quæ in officinis Borussicis usitata sunt. Supplementum pharmacopœæ Borussicæ. Editio ii. J. E. Schacht. Berolini. Gærtner.

Der chemische Analytiker. Gründliche Einführung in die qualitative chemische Analyse unorganischer wie organischer Stoffe, &c. Von O. Schlickum. Neuwied. Heuser.

Pharmaceutischer Taschen-Kalender für das Jahr 1864. Herausgegeben von F. Klinger. Wien. Tendler & Co.

Pharmaceutische Zeitschrift für Russland. Red. Dragendorff. 1863.

Analytische Tabelle m. den natürlichen Farben der Niederschläge. Chromolith. Von F. A. Kuberth. Prag.

Lehrbuch der Pharmacognosie. Von Dr. J. W. A. Wigand. Berlin. A. Hirschwald.

Entwickelungserscheinungen der organischen Zelle. Von H. Karsten. Berlin. Schade.

Lehrbuch der organischen Chemie od. der Chemie der Kohlenstoffverbindungen. Von Prof. Dr. A. Kekulé. Erlangen.

Die Delondre-Bouchardatschen China-Rinden. Mit 1 Tab. Von Prof. Dr. P. Phœbus. Giessen. Ricker.

SCHEDULE OF THE CLASSIFICATION.

Practical Pharmacy.

Processes, Apparatus, &c.
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Extracts.
Syrups.
Glyceroles.
Mixtures.
Lozenges, Jellies, Confections.
Pills.
Plasters.
Liniments, Washes, &c.
Collyria.
Cauterizers, Escharotics, &c.
Miscellaneous Observations.

Materia Medica.

I. *Vegetable Drugs,*

Arranged in the order of the Natural Families, viz., Ranunculaceæ, &c.

II. *Animal Drugs.*

Mammalia.
Aves.
Pisces.
Insecta.
Protozoans.

III. *Minerals.*

IV. *Medicinal Chemicals.*

(1.) Inorganic Compounds—
  Non-metallic Elements.
  Alkalies and their Compounds.
  Alkaline Earths and Earths.
  Heavy Metals.

(2.) Organic Compounds—
  Cyanogen Compounds.
  Organic Acids.
  Ethers and Alcohols.
  Other Organic Bodies.

Chemistry.

I. *Inorganic Chemistry*—viz., Oxygen, Hydrogen, &c.

II. *Organic Chemistry.*

(1.) Carbohydrides.
(2.) Organic Acids.
(3.) Alcohols and Derivatives.
(4.) Volatile Oils and Resins.
(5.) Organic Alkaloids.
(6.) Carbohydrates and allied Compounds—(*a*, Sugars; *b*, Saccharoids; *c*, Glucosides; *d*, *e*, Starches.
(7.) Coloring Matters.
(8.) Protein Compounds.
(9.) Ferments, Fermentation, &c.

III. *Physiological and Pathological Chemistry.*

IV. *Vegetable and Agricultural Chemistry.*

V. *Analytical Chemistry.*

(1.) Inorganic Compounds—
  General Results.
  Acids and Halogens.
  Alkalies, Alkaline Earths and Earths.
  Oxides of Heavy Metals.

(2.) Organic Chemistry.
  Organic Acids.
  Organic Alkaloids.
  Other Substances.

PHARMACY.

PROCESSES, APPARATUS, &C.

Distillation of Mixtures. Berthollet's experiments with the fractional distillation of volatile bodies, have shown that when two such liquids, differing considerably in their boiling-point, are mixed in certain proportions, the first portion of the distillate contains a larger relative proportion of the less volatile body than the original mixture; and that the more volatile liquid may come over at the last nearly pure. The explanation of these facts, so contrary to usual observation, is closely connected with the mutual influence of the tension of their vapors at the time of disengagement. J. de Ph. xliv. 289. Ch. N, 216.

J. A. Wanklyn calls attention to the effect produced by the density of liquids, and their respective vapors, upon the quantities of each obtained in fractional distillation. Ph. J. and Trans. 1863. Am. J. Ph. xxxv. p. 559.

M. C. Lea gives an instance of the uncertainty attending fractional distillation, from his observations on the distillation of a mixture of the chlorides of ethylamin, diethylamin and triethylamin with caustic alkali. Am. J. Sci. and Arts, xxxvii. 377.

Frigorific Mixtures. J. Hanaman reports a series of experiments on the effect of the sulphates, chlorides and nitrates of the alkalies in reducing temperature. Viertelj. Ph. bd. xiii. p. 3. Am. J. Ph. xxxvi. 104.

An excellent refrigerating mixture, reducing the temperature to —35° Fahr., is obtained, according to Reissing, by mixing sulphocyanide of potassium with ice. The salt may be re-obtained by evaporation. Polyt. Centralhalle. Am. J. Ph. xxxvi. 112.

A new oil lamp furnace, capable of melting metals in small quantities, and believed to be as powerful as the best gas furnaces, has been devised and described by Chas. Griffin. Ch. N. 213.

Stopper for Bottles. A patent has been issued in England for a new stopper, consisting of a thin ring of cork fitting around the mouth of the bottle, and enclosed within a metallic capsule. One side of the capsule swings open on a hinge, and allows the egress of the liquid. Ph. J. and Trans. v. 234.

Blue Varnish for Bottles. A. Vogel proposes the use of spirit varnishes containing aniline to give a blue coating to bottles holding substances easily affected by the light. N. Jahrb. Ph. xx. 44.

Cement. A cement which stands fire and water is prepared by E. Wagner by coagulating 2 pints fresh milk with vinegar, pouring off the whey, and beating the residue with the whites of 4 or 5 eggs; finely pulverized unslacked lime is then thoroughly incorporated with the mixture until of the right consistence. After application, it should be gradually and thoroughly dried. Deut. Ind. Zeit. N. Jahrb. Ph. xx. 43. A. D. Circ. vii. 185.

Test Paper. According to Goppelsroeder and Schneider, the flowers of the Malva arborea furnish a coloring matter which is a very delicate test of both acids and alkalies; its original violet color being changed to a green by alkalies, and restored and turned to a crimson color by acids. This reddened paper is colored blue by the nitrates, and is hence affected by a number of animal secretions and vegetable juices, which have recently been shown to contain these bodies. Ann. Ph. Ch. cxix. 64. J. de Ph. xliv. 163. A. D. Circ. viii. 56.

Litmus for Testing. In view of the tendency of ordinary solutions of litmus to lose color by age, Dr. Vogel recommends the preparation of a solid extract by cold water, which can be at once dissolved when wanted for use. J. de Ph. xlv. 70. Ch. N. 230. A. J. Ph. xxxvi. 340.

Gas Furnace. C. Gore describes the construction of a patent gas furnace, capable of melting cast iron, &c., for analytical and other purposes requiring a high heat. Ch. News, 187. A. D. Circ. viii. 109.

Impermeable Vessels. Kuhlman states that common clay vessels, saturated with pitch, may be recommended for their impermeability and the resistance they offer to acids. Drain tile may be advantageously saturated with pitch in some cases. Compts. R. Ch. N. 188. A. J. Sci. and Arts. A. D. Circ. vii. 185.

To prevent the action of water upon lead pipes, Dr. Schwartz, of Breslau, proposes to fill lead pipes with a strong solution of an alkaline sulphuret for 10 to 15 minutes; a coating of insoluble sulphuret is thus formed, which perfectly protects the metal. Ch. N. 199. A. D. Circ. viii. 50.

Lead pipes which are readily corroded by aqueous vapor may well be substituted, according to Lermer, by those made of an alloy of lead containing 63 per cent. of tin, which are not thus affected. J. de Ph. xliv. 498.

Graduated Measures. B. S. Proctor calls attention to the precautions necessary in the manufacture and use of these measures to insure accuracy. Ch. and Drug. 1863. A. D. Circ. vii. 137.

Apparatus for determining the Alcoholic Strength of Wines. Scheefer, of Mayence, has constructed and described a simple but accurate distillatory apparatus for this purpose. J. de Ph. xliv. 484.

Economy in the Use of Alcohol in Pharmacy. See some practical remarks on this subject by Prof. Procter. A. J. Ph. xxxvi. 1. A. D. Circ. viii. 44.

Dialysis. A practical application of this process has been proposed by A. Whitelaw, of Glasgow, in the separation of chloride of sodium and nitrate of potassa from the brine in which meat has been pickled. The liquid left in the dialyser is a pure juice of meat, from which a nutritious and palatable soup can be prepared. Beef bladders were found the best dialysers on a large scale. Ph. J. and Trans. v. 516; vi. 39. A. J. Ph. xxxvi. 354, 372. A. D. Circ. viii. 136.

Percolation. Prof. Redwood discusses the advantages and disadvantages of this process, as a general method for the preparation of tinctures, as compared with maceration, and recommends an apparatus in which the drug to be exhausted is submitted successively to both operations. Ph. J. and Trans. v. 533. A. D. Circ. viii. 105.

H. Deane recommends a funnel in which the sides form an angle of 82° with the base. Ph. J. and Trans. v. 533.

Pharmaceutical Weights. Prof. Millington describes an easy and cheap way of making grain weights, &c., out of fine brass or iron wire. A. J. Ph. xxxv. 3. See practical remarks on how to prescribe and weigh in grains. Med. Times and Gaz. Ph. J. and Trans. v. A. J. Ph. xxxvi. 359.

Apparatus for Making Gelatine Capsules. Viel, a pharmaceutist of Tours, makes use of two plates of steel covered regularly by a number of small hemi-spherical depressions, upon which the gelatine in thin sheets is spread. By a slight pressure, these sheets are made to occupy the cavities, which are then filled by a tube leading from the resevoir containing the liquid to be enclosed. The two plates are then brought together by a screw, by which the opposite cavities are superposed, their walls united and the now spherical capsule cut from the rest of the sheet. J. de Ph. xlv. 172.

POWDERS.

Powdered Gum Arabic has been noticed in England to be adulterated with rice, starch, sago-meal and flour. These impurities were readily detected by the microscope. Ph. J. and Trans. v. 233.

Effervescing Powder is prepared by Dr. C. Bedall from 5 parts well dried and powdered tartaric acid and 6 of bicarbonate soda, by moistening their mixture with alcohol, passing it through a sieve, and drying thoroughly the granular mass thus obtained. This effervesces on the addition of water until entirely dissolved. N. Jahrb. Ph. xx. 75. A. D. Circ. vii. 169. A. J. Ph. xxxvi. 312.

Powdered Camphor it is recommended to prepare by rubbing camphor upon a kitchen grater, and sifting out the finest particles. Schweitz. Wochenschr. Ph. A. D. Circ. viii. 88.

Powdering Gum Resins. This difficult task, it is said, may be facilitated by the addition of a little oil of sweet almonds. Ibid.

Powdered Charcoal prepared from burnt corks has been found highly successful in the treatment of epidemic dysentery. A. D. Circ. viii. 89.

Dentifrice Powder. Cream tartar 100 grms., kaolin 100 grms., tannin 2 grms., sugar 50 grms., orris powder 25 grms.; triturate each separately to a fine powder, mix, and aromatise with 15 drops essence of mint. A. J. Ph. xxxvi. 311.

Pulvis Antimonialis, according to the new British Pharmacopœia, is simply a mixture of one part oxide of antimony and two of phosphate of lime. See comments by Dr. Attfield, Ph. J. and Trans. v. 533.

Powdered Tartaric Acid. An article containing 12 per cent. of Rochelle salt, has been noticed in commerce. Ph. J. and Trans.

Powdered Opium. A sample of this article was found, on examination, to contain 25 per cent. of inorganic matter. Ph. J. and Trans.

Ground Spices. Dr. H. Schroeder finds examination by the microscope the best method of detecting the various bodies fraudulently added in commercial spices. Dr. S. publishes the results of his observations on the ground spices of the continental market, showing a very large amount of adulteration in nearly all of them. Vierteljh. Ph. xiii. 25. A. J. Ph. xxxvi. 107.

DISTILLED WATERS.

Aqua Rosæ. Menthus states that the interior petals of the hundred-leaved rose are more odorous than the exterior. He also believes that the usual practice of allowing the calyx to remain attached to the petals in making rose-water is, on the whole, beneficial, as an astringent matter is yielded by it, which tends to coagulate certain matters which might otherwise contaminate the distillate. J. de Ph. xliv. 497. A. J. Ph. xxxvi. 114.

A commission reporting to the Société de Pharmacie de Paris recommend the use of the contused petals, and of a jet of steam introduced directly into the distillatory apparatus. It is important that the exit tube of the retort should be sufficiently large. J. de Ph. xlv. 492.

Aqua Amygdalæ Amar. Schlagdenhauffen has called attention to the necessity of allowing time, in the production of this water directly from the bitter almonds, for the development of the hydrocyanic acid and the hydruret of benzyl. The mixture of finely-powdered almonds with 10 times their weight of water, should be allowed to ferment for three days before it is submitted to distillation. Thus prepared, it contains, on an average, 2 per cent. of the acid officinal in U. S. Pharmacopœia. Ch. N. 1863. A. J. Ph. xxxvi. 158.

Dubail, Grassi and Marais find this water, which has been distilled from the almonds previously deprived of their fixed oil, to contain the largest amount of hydrocyanic acid. J. de Ph. xlv. 492.

Aqua Lauro-cerasi. Fraisse confirms the observations of others in regard to the stability of this preparation. A specimen kept for four months was found to have undergone no change in its amount of hydrocyanic acid. Fraisse does not consider the quick lactescence of cherry laurel water on the addition of ammonia,—due to the formation of hydrobenzamide, a conclusive test of its quality, since a specimen rich in hydruret of benzyl may contain but little hydrocyanic acid. Most frequently, however, those richest in acid were found to be those containing also the most hydruret of benzyl. J. de Ph. xlvi. 27.

Dubail, Grassi and Marais recommend distilling this liquid from the contused leaves, mixed with three times their weight of water, and propose adopting, as a standard in the Codex, 50 milligrammes as a maximum of hydrocyanic acid, and 40 as a minimum, in 100 grammes. The amount of acid yielded by different plants was found to vary greatly, even when grown under similar circumstances, a difference being observable even on contiguous leaves on the same plant. The youngest leaves afford more hydrocyanic acid than the older ones. J. de Ph. xlv. 492.

Preservation of Distilled Waters. Dubail, Grassi and Marais insist upon keeping these preparations in small bottles, hermetically sealed, and in a dark place. J. de Ph. xlv. 492.

SOLUTIONS.

Liquor Gutta-perchæ. Gutta-percha may be purified for this preparation by dissolving it in 20 parts pure hot benzine, adding one-tenth part of well calcined gypsum, and after shaking it several times in a well covered vessel, setting it aside for two days, for the precipitate to fall. By pouring it into a double volume of strong alcohol, the gutta-percha is obtained as a white, soft mass, which, after drying, may be dissolved in chloroform. Jacob. Ch. Tech. Rep. N. Jahrb. Ph. xx. 43.

Artificial Mineral Waters. An improved formula for Vichy water, under which name a simple solution of bi-carbonate of soda, with a slight excess of carbonic acid is frequently sold, is given by Bouquet. A new formula for Selzer water has also been proposed, which is said to produce a good imitation of the natural water. J. de Ph. A. D. Circ. vii. 105.

Solution of Acetate of Ammonia. The British Pharmacopœia directs this preparation to be made directly from a solution of ammonia instead of its carbonate. R. M. Atkinson states that the salt volatilizes at a temperature of 96° Fahr. Ph. J. and Trans. v. 462.

Medicated Waters. The British Pharmacopœia directs these preparations to be made by distilling the fruits, barks, flowers, &c. with water, except in the case of spearmint and peppermint, when the oils are to be used.

E. Brown reports favorably on the preparation of these waters by digesting the essential oils with water, enclosed in a strong, well corked bottle, and exposed for half an hour to a temperature of 203° to 206° F. Ph. J. and Trans. v. 356.

Lemon juice has been preserved by Charles Symes for several months, in the colder part of the year, by simply heating it to 150° F., bottling carefully, and sealing. Ph. J. and Trans. v. A. J. Ph. xxxvi. 36. A. D. Circ. viii. 7.

Labarraque's Solution. It is recommended to use bi-carbonate in the place of carbonate of soda, when making this preparation with chlorinated lime, as the precipitate formed is less bulky, and more of the liquid can be obtained by decantation. Bœttgers. Notizbl. A. D. Circ. viii. 24.

Dilute Hydriodic Acid, U. S. P. See a note on the preparation of this solution, by Professor Procter. A. J. Ph. xxxvi. 210.

Sulphurous Acid, U. S. P. Professor Procter states the results of his experience in making this preparation. A. J. Ph. xxxvi. 211.

Lemonade. Ladi proposes sulphite of magnesia as a means of preserving lemonade, the gradual oxidation to the sulphate appearing to retard its spoiling. Schweiz. Zeitsch. f. Ph. 1863, 312.

Solution of Citrate of Magnesia. Parisel recommends mixing intimately 200 grammes, well dried and powdered citric acid with 120 grammes carbonate of magnesia—to be kept in a well stopped bottle. When rapidly dissolved in three times its weight of water, a transparent solution is obtained in a few minutes, which keeps well. Bull. Thèrap. 1863. A. J. Med. Sci., 1864, 221.

Solution of Permanganate of Potassa. Leconte prepares this solution as follows: Dissolve 360 grains caustic potassa and 300 grains chlorate of potassa in a small quantity of water, add 300 grains binoxide of manganese, evaporate to dryness, and calcine the dry mass to a dull redness for an hour. Dissolve the mass when cold in 2 quarts of water, and filter, if necessary, through sand. One drachm of this solution mixed with three to five of spring water forms a good wash for ulcers, &c. Lancet, 1863. A. J. Ph. xxxvi. 41.

McMunn's Elixir of Opium. This preparation appears to be an aqueous extract of denarcotized opium, to which rather more than an equal bulk of strong alcohol has been added. Med. and Surg. Recorder. A. D. Circ. viii. 67. Am. J. Ph. xxxvi. 262.

DECOCTIONS.

Phosphates in Decoctions. Terreil calls attention to the crystalline phosphatic deposit forming in decoctions of certain drugs, and suggests that the beneficial effects of these preparations may be in part due to the soluble phosphates they contain. Bull. de Thèrap. lxiv. 29. A. D. Circ. viii. 124.

TINCTURES AND SPIRITS.

Essence of Mustard. Barbet proposes the extraction of the rubefacient properties of mustard by macerating 250 parts of finely ground, black mustard seed, for two hours, in 500 parts cold water, adding 125 parts alcohol of 86° C., and obtaining by distillation 125 parts of liquid. J. de Ph. xiv. 71. A. J. Ph. xxxvi. 113.

Genuine Cologne Water. The following formula has been published by one of the Farinas: ℞. Benzoini (purified,) ℥ij; Ol. Lavandulæ, ℥iv; Ol. Rosmarini, ʒii (by weight); Alcohol. fortior; Cong., ix. To this solution are added successively Ol. Neroli, Ol. Neroli (petit grain,) Ol. Limonis of each 10⅖ oz. Ol. Aurantii Dulcis, Ol. Limettæ, Ol. Bergamii of each 20⅘ oz.; Tinct. Flor. geranii rosei, q. s. Macerate for some weeks, then fill into flasks. Zeitsch. Norddeutch. Vereins. A. D. Circ. viii. 85. A. J. Ph. xxxvi. 375.

To distinguish between genuine and factitious Brandy. Wiederhold states that the acid reaction of the genuine cognac has not been met with in samples of the factitious article so far as examined. A few drops of a dilute solution of chloride of iron produce a deep black coloration in true brandy, which is not observable in the imitation; in the latter, after some time, a colored precipitate frequently results. Further examination is necessary to determine if these appearances are constant. N. Jahrb. Ph. xxi. 171.

WINES.

Vinum diureticum. Bacc. Juniperi partes 50; Fol. digitalis, 10; Rad. Scillæ, 5; Vin. alb. 750; Macerate 4 days, and add Potass. Acetatis, partes 15. Ph. J. and Trans. v. 135.

Wines. Guibourt, Decage and P. Blondeau recommend the process of maceration, instead of displacement, in the preparation of the wines of the French Codex. They state that the last portions of the wine, remaining in the marc, cannot be obtained by displacement with water, owing to a mixture of the two liquids in the apparatus.

They suggest the employment of wines containing 8 to 11 per cent. absolute alcohol, and the addition in certain cases of about 5 per cent. alcohol to assist their solvent power. J. de Ph. xliv. 138.

Rennet Wine. It is proposed to use rennet wine instead of pepsin in some cases of dyspepsia. Bull. de Thérap. J. de Ph. xlv. 498.

An artificially colored wine may be detected, according to Blume, by placing a small piece of sponge, saturated with the suspected wine, in a porcelain vessel containing water. If artificially colored, its color is immediately diffused throughout the liquid, while in the genuine wine 15 to 30 minutes elapse before the same diffusion takes place. J. de Ph. xlv. 108. Ch. N. 216. A. D. Circ. viii. 89.

VINEGARS.

Acetum Opii. Mayet, in a lengthy article on this preparation, reviews its history, discusses the comparative merits of different formulæ, and proposes the following as an improvement: Hard opium 100 parts, distilled vinegar 600, saffron 8, nutmegs 25, sugar 50. Macerate the coarsely powdered opium, saffron and nutmeg with three-fourths the vinegar eight days, heat over a water-bath half an hour, strain and express; add the remainder of the vinegar to the dregs; after twenty-four hours, express, mix the liquids, filter, add the sugar and evaporate in a water-bath to 200 parts. The preparation should mark 31° B. J. de Ph. xlv. 27.

Acetum Scillæ. On account of the glutinous nature of this drug, its exhaustion is best effected by swelling it, after being coarsely powdered, by the addition of a pint of the vinegar before pressing it into the percolator, as directed by the U. S. P., 1860. Prof. Procter, A. J. Ph. xxxvi. 298.

VOLATILE OILS.

Enfleurage. E. Sichel suggests separating the odorous matter obtained by this process from the fat, by thoroughly incorporating alcohol with the mixture, and exposing the whole to a temperature of zero, which solidifies the fatty portion. The alcoholic tincture is then separated by filtration. Rep. Ch. appliq. 1863, 178. N. Jahrb. Ph. xx. 105.

Recovery of small amounts of Volatile Oils. T. B. Groves succeeds in obtaining volatile oils from their watery solutions by first adding to them olive oil, and then saponifying with potash. The soap thus formed, when decomposed by an acid, liberates the mixed oils, from which the aromatic portions may be extracted by spirit. Ph. J. and Trans. v. 347. A. J. Ph. xxxvi. 14. A. D. Circ. viii. 44.

Adulteration of Volatile Oils. In Philadelphia the Reporter learns that eupion is sometimes used to adulterate volatile oils.

Essence of Mace, falsified by the alcoholic tincture of nutmegs, has been noticed by De Letter. The presence of alcohol can be readily detected by the green coloration produced by the addition of sulphuric acid and bichromate of potassa. Bull. de Soc. Ph. de Brux. A. D. Circ. viii. 108.

Detection of Alcohol in Volatile Oils. Sodium has been employed by Dragendorff for this purpose with satisfactory results. Zeits. f. Russland. Vierteljh. Ph. xiii. 26. A. J. Ph. xxxvi. 103.

Yield of Volatile Oils. Prof. Hirsch gives the average yield of various volatile oils in commercial manufacture. N. Jahrb. Ph. xx. 156.

FIXED OILS.

Fluidity of Oils. A. Vogel determines the fluidity of oils by allowing them to pass through a graduated vessel terminating with a fine orifice. The relative amount passing through, in equal times, at the same temperature, indicates their relative fluidity. N. Jarhb. Ph. xx. 138.

The Adulteration of Olive and Almond Oils by poppy seed and other drying oils may be detected by nitrous acid gas introduced into water upon which the suspected oil is floating. The elain of the non-drying oils is thus converted into the solid elaidin, which is not the case with that of the drying oils. Ch. Centralblatt, 1863, 336. Zeits. An. Ch. ii. 409.

Hauchecorne finds the peroxide of hydrogen a delicate test for the purity of olive and other oils. The admixture of 10 per cent. of a foreign oil may be detected by the difference in color produced with this reagent. Zeits. An. Ch. ii. 443.

FLUID EXTRACTS.

Fluid Extract of Colchicum Seed. J. M. Maisch observes that the usual turbidity of this preparation is due to a brownish oil which, upon long standing, rises to the surface of the liquid, and may be separated by a siphon or separatory funnel. A. J. Ph. xxxvi. 98.

EXTRACTS.

A long and detailed examination of this class of preparations, officinal in the French Codex, has lately been made and reported on, in view of the pending revision of this work, by Dublanc, Schaeuffele and Duroy. J. de Ph. xliv. 215.

The extracts made from the fresh herbs, as belladonna, &c., are directed by the British Pharmacopœia to be prepared from the expressed juice by heating it first to 130° F. to coagulate the chlorophyll, which is to be strained out; heating then to 200°, to separate the albumen, and then evaporating the clear liquid on a water-bath to the consistence of a syrup, when the chlorophyll is to be mixed with it and the whole evaporated to a proper consistence, at a temperature not exceeding 140°. It is questionable whether the advantage to be gained by this refinement upon the usual method will counterbalance the injurious effect of the long exposure to heat necessary to accomplish it.

A suite of specimens prepared by Berjot, of Caen, from decoctions made *in vacuo*, excited particular admiration in the late London Exhibition, on account of their extremely light and frothy character. They were also very hygroscopic. These extracts were preserved in a perfectly dry condition by a layer of unslacked lime in a cavity in the stopper. Ph. J. and Trans. v. 548.

SYRUPS.

Syrup. Copaibæ. Edward du May prepares this syrup as follows: Take of balsam copaiba 167 grammes, calcined magnesia 9 grammes, simple syrup 320 grammes, yolk of eggs, fresh, 4. Triturate the yolk of eggs with the magnesia, add the copaiba, mix intimately, and add the syrup. Jour. de Chim. Méd. Am. J. Ph. xxxv. p. 508. A. D. Circ. vii. 191.

Syrup. Limonis. M. Timbalagrave prepares a very agreeable syrup, and one that can be kept without alteration a long time, by adding to the grated yellow rind of twenty-five lemons, in a bottle, about 3½ pints simple syrup, and after four days, mixing it with 31½ pints boiling syrup and 13 drachms citric acid. J. de Ph. xliv. 136. A. J. Ph. xxxv. 18.

Syrup. Fuci Vesiculosis. Potier proposes the following formula: Fucus vesiculosis, coarsely powdered, 150 parts, alcohol of 14 per cent. 460 parts. Macerate four or five days, express, macerate as before, and again express; mix the liquids, filter, evaporate till the whole weighs 230 parts and add sugar 370 parts. J. de Ph. xliv. 137.

Syrup. Santonin. The following preparation is suggested as an agreeable vermifuge: Santonin 55 grains, simple syrup 16 oz. (troy), alcohol q. s. Dissolve the santonin in a little alcohol, and add it to the syrup boiling hot. A. D. Circ. vii. 169.

Syrup. Lactucarii Opiat. Aubergier's formula for a syrup of which each spoonful contains ⅙ gr. ext. lactucarium and $\frac{1}{12}$ grain extract opium, is published in J. Ch. Med. 1864. A. J. Ph. xxxvi. 213.

Syrup. Ferri Iodidi. E. Fougera states his experiments upon the bleaching power of light and heat upon a mixture of iodine and syrup. Syrup treated with iodine at a moderate temperature for a number of hours, becomes almost colorless, and contains much glucose, is unalterable in the air, and behaves towards reagents like an iodide. *Query.* Is the iodine partially converted into an iodide of glucose? A. J. Ph. xxxvi. 307.

Honey has been suggested as a substitute for sugar in this preparation, with the addition of citric or tartaric acid, to render it more stable. Thus made, the name of citromel or tartromel of iodide of iron has been applied to it. The following formula is proposed: 139·9 grammes of iodine and 47 grammes of iron are dissolved in water, so that the filtered solution weighs 195·25 grammes; 35·5 grammes of this solution are then added to a mixture of 375 grammes of honey and 23·5 of citric acid dissolved in 35·5 of water, and sufficient water added to make the whole weigh 426 grammes. The tartromel is made in a similar manner, but with 15·5 grammes of tartaric instead of the citric acid. These preparations keep well. Bull. de Thérap. N. Jahrb. Ph. xxi. 159.

Syrup. Chloroformii. By altering the density of chloroform by the addition of ether until it equals that of syrup, T. B. Groves finds no difficulty in making an homogeneous and permanent preparation by means of syrup of gum arabic or honey. Into a twelve-ounce bottle, 1 oz. chloroform and 3 drachms ether are introduced, with an equal bulk of syrup. More ether is added if the chloroform shows a tendency to separate after shaking, and the bottle is then filled with syrup of gum arabic or honey. Ph. J. and Trans. v. 599.

Pagliano's Syrup. This Italian quack medicine has been found by C. Eckert to be sweetened tincture of jalap. Vierteljh. Ph. xiii. p. 58.

Syrup of Iron and Cinchona. Grimault recommends the following as affording a preparation of perfectly limpid appearance and agreeable taste: Take of pyrophosphate of iron and soda 10 grammes, distilled water 300 grammes, sugar 700 grammes. Dissolve the iron salt in the water, and add the sugar to the solution in a water-bath. Filter the liquid, which should then be perfectly transparent. Dissolve 5 grammes of the hydro-alcoholic extract of cinchona in 100 of alcohol, filter and mix the liquids. The syrup thus made contains 1½ grains extract cinchona and 3 of the iron salt in the teaspoonful. A. J. Med. Sci. 1864, 221.

GLYCEROLES.

Glycerole of Borax. Glycerin, pure, 30 parts, borax 10 parts. Used as an application in sore mouth, &c. Rep. de Ph. J. de Ph. xliv. 213.

Glycerole of Chlorate Potassa. Chlorate potassa 1 part, glycerin 10 parts. Used as a disinfectant, and a dressing for wounds. J. Chim. Méd. 1861. A. D. Circ. vii. 158.

Glycerole of Oil of Mustard. Grimault proposes the following mixture as a substitute for sinapisms, being always ready for use and easily applied: Pure glycerin 13 drachms, starch 20 drachms, volatile oil of mustard 30 drops. J. Chim. Méd. 1861. A. D. Circ. vii. 169.

Glyceroles of Sulphate of Iron, &c. Take of the salt 10 parts, glycerin 100, dissolve. In the same manner prepare glycerole of sulphate of copper, sulphate of zinc, and nitrate of silver. J. de Ph. xlv. 84.

Glycerole of Tannin. Tannin 10 parts, glycerin 100, dissolve. J. de Ph. xlv. 84.

Glycerole of Carbolic Acid. Maissonneuve employs a solution of 1 part carbolic acid in 1000 of glycerin, as a dressing to wounds, in preference to a solution of permanganate of potassa. J. de Méd. et Chir. 1863. A. J. Med. Sci. 1863, 258.

Glycerole of Bismuth. Débout recommends a mixture of 1 part subnitrate of bismuth with 3 of glycerin, as a local application in eczema, chaps of the lips and hands, &c. Bull. Thérap. lxiii. A. J. Med. Sci. 1864, 231.

MIXTURES.

Emulsion of Pumpkin Seed and Male Fern. 40 parts pumpkin seed are bruised with 7½ parts sugar and a little water, to a homogeneous paste; 4 to 8 parts of the oleo-resin of male fern, 22½ parts sugar and 150 parts water are then gradually added. Six ounces of this mixture, taken at intervals early in the morning, is recommended as a remedy for tænia. Bull. Thérap. A. J. Ph. xxxvi. 213.

Mixture of Chloroform. Two volumes of white of egg and one of chloroform shaken together, readily form a homogeneous jelly-like mixture, which, when the chloroform is pure, will keep several days. Bull. Thérap. lxiii. 559. Ph. J. and Trans. v. 585.

T. B. Groves suggests the following as an anodyne preparation, from which the chloroform will not separate upon mixture with water. Chloroform 4 drs., ether 1½ drs., oil of peppermint 8 drops, resin of cannabis 16 grs., capsicum 2 grs. Macerate for two days and filter. Then add muriate of morphia 16 grs., hydrocyanic acid (Scheele's) 96 minims, perchloric acid, water, of each ½ dr., syrup of treacle or honey, sufficient to make 4 fluidounces. Ph. J. and Trans. v. 599.

This is offered as a substitute for the so-called chlorodyne.

Bibron's Bromine Mixture. A case of poison by the bite of the copperhead, successfully treated by this remedy, is reported by Dr. C. H. Hughes. It consists of potass. iodid. gr. iv., hydrarg. chlor. corros. gr. ij., brominii ʒv. Dose 10 drops, repeated if necessary. A. J. Med. Sci. 1863, 132.

LOZENGES, JELLIES, CONFECTIONS.

Santonin Lozenges are made by H. Christel, each containing ½ grain santonine from 16 ounces sugar, 100 grains santonine, the whites of 3 eggs and 10 to 15 drops of weak acetic acid. The acetic acid is added for the purpose of making the mass whiter and more manageable. Vierteljh. Ph. Bd. xii. p. 572.

Compound Santonin Lozenges. The following is the formula for Fougera's "Dragée de Santonine Composées," as furnished by the manufacturer: Santonin 25 grammes; jalapin 10; powdered gum arabic 30; chocolate pure 60; white sugar 160; water q. s. about 15 grms. Make into 1000 lozenges and coat with sugar. Resin of gamboge may be used in place of jalapin. A. J. Ph. xxxvi. 100.

Cod Liver Oil Jelly. Cod liver oil 30 parts; American isinglass 2 parts; water q. s. Dissolve the isinglass, and add the oil gradually, at a temperature not above 25° C. Then flavor with oil of anise. Gaz. Med. J. de Ph. xlv. 72. A. J. Ph. xxxvi. 113. A. D. Circ. viii. 63.

Confect. Sennæ. Professor Procter recommends the addition of the powdered senna and coriander to the other ingredients while they are still hot, as by this plan their albuminous constituents are more or less coagulated, and the preparation made less liable to mould. A. J. Ph. xxxvi. 305.

PILLS.

Iodide of Iron. Honey has been employed in France extensively, with powdered liquorice and mallow, as an excipient in these pills. Foucher recommends purified manna in tears in the place of the honey, and obtains a mass in which the green color of the protosalt is well preserved. Ph. J. and Trans. 1863. Am. J. Ph. xxxv. p. 561. A. D. Circ. vii. 169.

Pills of Phosphorus. Dr. Tavignot proposes the following formula: Oil of sweet almonds 8 grains; phosphorus 10 grains. Dissolve by means of a water bath, and add almond soap 8 parts, inert powder q. s. Divide into 100 pills.

Pil. Hydrarg. Dr. Attfield states that an efficacious preparation may be quickly made from the slate colored protoxide of mercury, precipitated from calomel by liquor potassæ, by incorporating it (2 parts) according to the formula of Tyson, with confect. rosæ 6 parts; powdered chamomile 1 part. Ph. J. and Trans. v. Ch. N. 230.

Poisonous Calomel Pills. Pills containing calomel have been noticed by Dr. A. Claus to have become poisonous in the course of a few years, by a spontaneous change resulting in the production of metallic mercury and corrosive sublimate. Ann. Ch. Ph. 1863, 209. Ch. N. 225.

Honey as an excipient for pills. Tribault believes that much of the disappointment following the employment of pills, is due to the insoluble condition they frequently acquire by age. Honey, he states, will always keep them soft, however long they may be kept. Bull. de Thérap. A. D. Circ. viii. 63.

Wright's Indian Vegetable Pills have been analysed by Schellhas, of Thal, Germany, who finds evidences of pepper, anise seed, or oil of anise, rhubarb, and a resinous substance, possibly podophyllin. No traces of the heavy metals, or those of the alkalies or alkaline earths, were discovered. Zeitsch. d. Norddeutsch. Apoth. Vereins. A. D. Circ. viii. 85.

Pills of Nitrate of Silver. A. Vie recommends the following formula: Nitrate silver 20 centigrammes; precipitated silica, washed and dried, 2; mucilage of gum as little as possible. Make into 20 pills; dry and keep them in the dark. Nitrate of potassa may be used instead of silica. Bull. Thérap. J. de Ph. xlv. 407.

CERATES, OINTMENTS, &C.

Preservation of Ointments. A. F. Hazelden finds that the tolu left from the manufacture of syrup tolu, recommended as a preservative of ointments, does not answer so well as gum benzoin. Ph. J. and Trans. v. 252. A. D. Circ. viii. 6.

Preparation of Ointments, &c. Joseph Ince insists upon the filtration of ointments, whenever possible, as a means of improving their appearance, and aiding in preserving them, especially those containing vegetable matter. Ph. J. and Trans. v. 264. A. D. Circ. viii. 13.

Ointment of Mercury. Dr. Attfield states that this preparation should be made directly from the black oxide, since metallic mercury is incapable of being absorbed by the living tissue. Ch. N. 230.

Neidhardt has suggested ascertaining the specific gravity of blue ointment, as a means of determining its amount of mercury. O. Löw has improved this suggestion, and prepared a table showing the proportion of mercury to fat in relation to its specific gravity. N. Jahrb. Ph. xxi. 20.

Verrier recommends a glycerole of starch (made by heating together 1 part starch and 5 glycerin) as a substitute for lard in this preparation. Added gradually with constant trituration it is easily made and keeps well. J. de Ph. xlv. 408.

Ointment for Rheumatism. The following has been employed with very satisfactory results: Extract of opium, extract of belladonna, extract of cinchona, of each 1·2 parts; solution of ammonia 1·8 parts; lard 32 parts. J. de Chim. Méd. ix. 90. N. Jahrb. Ph. xx. 40.

PLASTERS.

Breast Plasters. E. Parrish mentions various preparations which have been proposed as applications in inflammation of the mammæ, and describes the best method of applying them. Med. and Surg. Reporter, 1863. A. J. Ph. xxxvi. 118.

To prevent plasters from adhering to paper it is recommended to dust the latter over with a little powdered French chalk. A. D. Circ. viii. 12.

Emp. Arnicæ. This plaster, as now officinal in the U. S. P., represents an equal weight of the flowers. Prof. Procter, A. J. Ph. xxxvi. 306.

LINIMENTS, WASHES, &C.

Solution of Sulphurous Acid, prepared from sulphite or hyposulphite soda, one troy ounce, acetic acid one fluid ounce, water seven fluid ounces, has been employed by Dr. Garrod successfully, for parasitic affections of the skin. Canada Lancet. A. D. Circ. viii. 65.

Fine clay as a dressing for wounds. Dr. Schreber, of Leipzig, recommends the use of clay as "the most energetic, innocent and simple of palliative applications to surfaces yielding foul and moist discharges. Bost. Med. J. 1863, 381. A writer in Braithwaite's Reporter corroborates this statement, and recommends the application of it as a poultice when made fluid with water and enclosed in fine linen. A. D. Circ. viii. 65. A. J. Ph. xxxvi. 272.

Petroleum has been used with great advantage as a dressing to suppurating wounds. A. D. Circ. vii. 155.

Benzine Liniment. A wash composed of 10 parts benzine, 5 parts soap, and 85 water, has been found very useful by Gille, in destroying parasites on dogs. Bull. de Ph. de Brux. N. Jahrb. Ph. xx. 36.

Tincture of Aloes, made in the proportion of 1 part aloes to 2 of alcohol, has been used very successfully, by Delioux, in the treatment of suppurating wounds and obstinate ulcers. Bull. de Thérap. lxvi. 28.

COLLYRIA.

Collyrium of Bromide of Potassium. Bromide of potassium 1 part; water 30 parts. A. D. Circ. vii. 153.

Collyrium of Tannin. Dr. S. R. Sheraton has used a solution of 60 to 120 grains. in 1 ounce distilled water, as an astringent application in several inflammatory affections of the conjunctiva, with great success. In some cases its action has been modified by belladonna, morphia, &c. Med. Times and Gaz. 1863, 272. A. D. Circ. viii. 65.

Improved method of applying Atropia, &c., to the eyes. Savory and Moore, by the addition of a little gelatin to a solution of atropia, obtain, by evaporation, a thin sheet possessing its peculiar properties, which, when cut into discs ⅛ inch in diameter, can readily be introduced into the eye, there to be gradually softened and absorbed. These discs may be made of any desired strength. The extract of calabar bean has also thus been satisfactorily exhibited. Chem. and Drug. A. J. Ph. xxxvi. 329.

Dr. I. Hays speaks favorably of this method of exhibiting atropia and the extract of the calabar bean, from his own observations. A. J. Med. Sci. 1864, 278.

CAUTERIZERS, ESCHAROTICS AND STYPTICS.

Sulphate of Copper. This may readily be made into pencils, according to K. Calmberg, by triturating 4 parts of it briskly with 1 part borax. The water of crystallization given out, unites them into a plastic mass, readily moulded. Vierteljh. Ph. bd. xii. p. 544. A. J. Ph. xxxvi. 106.

Llovet uses 2 parts sulphate of copper and 1 potassa alum, by fusing them together in a porcelain dish, and running them into moulds. N. Rep. f. Ph. xii. 229. A. D. Circ. vii. 154. A. J. Med. Sci. 1864, 234.

Improved Hæmostatic. The presence of an alkaline chloride in a perchloride of iron solution has the effect, according to Prof. Piazza, of rendering the clots more dense and homogeneous. The following formula has been proposed, having the advantage of not being so irritating as some other similar preparations, viz: Chloride of sodium, pure, 15 grammes; sol. perchloride of iron, chemically neutral, of 30° Beaumé, 25 grammes; distilled water 60 grammes. Its density thus made is 1·16. Bull. de Thérap. J. de Ph. xliv. 352.

Pancoast's Styptic. This preparation which has been highly recommended, is composed of carbonate potassa ʒj; castile soap ʒij; alcohol ʒiv. Chicago Med. J. A. D. Circ. vii. 188.

Sesquichloride of Iron, in a dry state, has been used with success by Dr. Gaillet in the treatment of ulcers about the nails, popularly known as the growing of the nail into the flesh. The salt, inserted between the nail and the protruding flesh, effects a prompt and painless cure. J. de Méd. et Chirurgie. A. D. Circ. vii. 155.

Perchloride of Iron and Collodion. One part of crystallized perchloride of iron dissolved in 6 of collodion forms an elastic pellicle, when spread upon the skin, and is a very suitable application to cuts, leech bites, &c., as a hæmostatic. Med. Times. A. D. Circ. viii. 123. Ph. J. and Trans. v. 587.

MISCELLANEOUS OBSERVATIONS.

Wax Paper. A. Ricker gives some practical hints on spreading wax (Japan wax) over smoothly pressed printing paper, by means of a hot iron. Vierteljh. Ph. xiii. p. 101.

Copaiba and Cubeb Capsules. E. Queru gives the following formula: Balsam copaiba 9 troyounces; oil cubebs 1 troyounce. To be divided into 480 capsules. The capsules are made of refined gelatine 95 per cent.; sugar 5 per cent.; water q. s. A. J. Ph. xxxvi. 9.

Bougies of vulcanized India Rubber are recommended as much superior to those of the ordinary material. J. de Méd. et Chir. A D. Circ. vii. 169.

Silicate of Soda Soap. F. Storer reviews the manufacture and present extensive use of this article in America. Ch. N. A. D. Circ. viii. 187.

The electuaries, conserves, juices, pulps and preparations of Chocolate have been reported on by a commission, appointed by the French Society of Pharmacy, in anticipation of the revision of the French Codex; they recommend the introduction of several new preparations, for which they propose formulæ. J. de Ph. xlv. 142.

Antiasthmatic Paper. Take of belladonna, stramonium, digitalis and sage leaves of each 5 parts; tincture of benzoin 40; nitrate of potassa 75; water 1000. Make a decoction of the leaves, filter, dissolve in it the nitrate of potassa, add the tincture benzoin and shake well. Immerse in this solution sheets of paper for 24 hours, which, when dried, are to be rolled into small tubes. J. de Ph. xlv. 72. A. J. Ph. xxxvi. 113.

Preservation of Gum and Starch Paste. J. M. Maisch recommends the addition of creasote, until its odor is slightly apparent, for this purpose. A. J. Ph. xxxvi. 97.

Ridgewood Disinfecting Powder. The disinfecting properties of this substance are favorably reported on by a commission of the New York College of Medicine. Its composition is stated to be carbolic acid 5 to 8 parts; sesquichloride of iron 2 to 5; charcoal, or pulverized pumice 5; lime, from magnesian limestone, 5, and fuller's earth 70 to 80 parts. A. Med. Times. A. D. Circ. viii. 25, 105.

Pagliari's Mixture, for the preservation of animal matters, consists of alum, gum benzoin and water, which, it is said, forms upon drying a kind of skin upon meat, &c., dipped in it, which protects it from the action of ferments. Compts. R. Ch. N. 219. A. J. Sci. and Arts, xxxvii. 440. A. J. Ph. xxxvi. 375.

Remedies for Chilblains. Selected formulæ for several stimulating applications to chilblains are given in A. D. Circ. viii. 44.

Preservation of wood. The following composition is recommended as a protection to the bottom of posts, tubs, &c., to be set in earth: 40 parts of chalk are added to 50 parts resin and 4 parts linseed oil, and melted together in an iron pot; 1 part of native oxide of copper is then added, and 1 part sulphuric acid cautiously stirred in. The mixture is applied with a strong brush and forms when dry a varnish as hard as stone. N. Jahrb. Ph. xx. 235. Ch. N. 227.

Glycerine has been employed, in very cold weather, for filling gas metres, with success. A. J. Photog. A. D. Circ. viii. 68.

French Cement, for mounting microscopical objects, is prepared by adding finely powdered slaked lime to melted india rubber, until it becomes of the consistency of putty when cold. It may be colored by vermillion, or other coloring matter.

Rendering Castor Oil Tasteless. Stan. Martin recommend beating it up with the contents of an egg, adding salt or sugar, and orange flower water. Vierteljh. Ph. xii. p. 572. A. J. Ph. xxxvi. 105.

Agreeable Infusion of Senna. Dr. Linthner advises to steep one or two drachms of senna over night in cold water, and to make coffee with the infusion in the morning. Thus prepared, senna produces no griping, and is not repulsive to the palate. Buchner's Rep. A. D. Circ. viii. 76.

Preservation of Plants in their Natural Shape. At the late London Exhibition, a collection of dried herbs and flowers was exhibited which retained their color and form perfectly preserved. They were prepared by being carefully covered by fine dry sand, which was kept dry by the skilful application of heat. N. Jahrb. Ph. xx. 215.

Bottles for holding Poisons. As a precaution against dispensing poisons by mistake, it is suggested by Thonger to attach a strip of sand paper to the bottles containing them. Ph. J. and Trans. v.

Calamus repulsive to Insects. Dr. Schultes has found the powdered rhizoma of Acorus calamus of the highest utility for the protection of herbaria from the attacks of certain insects, who at once desert the spot where its smell is perceptible. Buchner's Repert. 1863, No. 8. A. D. Circ. viii. 137.

Indestructible Writing. Lucas recommends for this purpose an ink composed of 20 grains of sugar dissolved in 30 grains water, to which a few drops of concentrated sulphuric acid are added. The writing should afterwards be passed through a weak alkaline solution, to remove excess of acid. Bresl. Gewerbebl. N. Jahrb. Ph. xx. 330.

Liquid Glue. Balland recommends a solution of 38 parts glue in 100 of commercial acetic acid as keeping well and making a strong cement. J. de Ph. xlvi. 35.

Fluorescence has been shown by Prof. Stokes to be due to a change in the refrangibility of the rays of light, and not to a decomposition of light itself. J. Chem. Soc. Ch. N. 237.

Remedy for Sea-sickness. The following formula is recommended by Morland-Hocken: Acid. hydrochlor. dil. 8 grammes, acid. nitric. dil. 14 grammes, acid. hydrocyanic. 16 drops, magnesiæ sulph. 24 grammes, aquæ 250 grammes. Dose, two teaspoonfuls every three or four hours. N. Jahrb. Ph. xxi. 167.

American Mustang Liniment is stated to consist of equal parts of petroleum, ammonia and strong alcohol. N. Jahrb. Ph. xxi. 168.

To distinguish Wool from Silk. Grothe has observed that when fibres of wool are heated, they become yellow at from 120° to 130° C., while those of silk do not acquire that color below 140° to 145°. When the fibres of wool thus colored and pressed between glass plates are viewed under the microscope, they are seen to have become twisted into ring-like forms, while those of silk remain straight. Upon dipping the suspected fibres into a solution of sulphate of copper, after having been previously treated with a weak solution of caustic alkali, the beautiful green color which the wool acquires rapidly becomes brown upon exposure to the air, which is not the case with silk. N. Jahrb. Ph. xxi. 169.

Persoz states that neutral chloride of zinc in solution dissolves silk, but not cotton, linen and wool. The ammoniacal solution of cupric oxide, on the other hand, dissolves cotton readily, silk and linen more slowly, and wool not at all. By treating, therefore, a mixed fabric, first with neutral chloride of zinc to remove the silk, then with an ammoniacal solution of copper to dissolve the cotton, and, lastly, with a solution of potassa, in which wool is soluble, an estimation of the amount of these fibres may be made. Vierteljh. Ph. xiii. 100.

Collodion Varnish. Mixed with one-thirty-second part of castor oil, collodion is recommended by O. A. Bernhard as an excellent varnish for paper, maps, &c. The white spots on its surface can be removed by a few drops of ether. N. Jahrb. Ph. xxi. 178.

Rendering Bitter Substances Tasteless. On account of its anæsthetic power, chloroform has been recommended as an addition to bitter liquids, to conceal their taste. For the same purpose, a drop or two of chloroform may be spread upon the tongue before taking such substances into the mouth. N. Jahrb. Ph. xx. 157. A. J. Ph. xxxvi. 313.

Flesh Preserved in its Raw state was exhibited at the late London Fxhibition by R. Jones and F. Trevithick, of London, which had been subjected to the following treatment: The raw flesh was enclosed in strong tin cans, from which the air was removed by means of an air pump, when a small quantity of sulphurous acid gas was admitted, which was readily absorbed by the meat. The vessel was then filled with pure nitrogen and hermetically sealed. Several kinds of flesh and fish thus preserved retained their fresh appearance during the continuance of the Exhibition. Dr. A. Geyger, N. Jahrb. Ph. xxi. 215.

Test for Grease, &c. J. Lightfoot makes use of the curious rotatory movements of camphor when placed upon perfectly clean water, as a test for grease; these movements being immediately stopped when the smallest particle of grease is brought into contact with the water. Many of the fixed and volatile oils have been found to possess this "pimelic" property, and a table is given of these and of certain "apimelic" substances. Ch. News, 188. See also a paper describing previous experiments on this subject by Chas. Tomlinson. Ch. News, 189 and 190.

Test for liquids founded upon "Cohesion Figures." C. Tomlinson has called attention to the curious figures produced by a drop of oil when placed upon the surface of chemically clean water, in a chemically clean vessel. The figure assumed is the resultant of two opposite forces,—the adhesion of the liquids, tending to spread the drop out into a film, and the cohesion of the drop, resisting such extension. These vary with the liquid experimented with, and the figure is believed to be different for every different liquid. The author has noticed the characteristic figure for castor oil, balsam copaiba, olive oil, oil of turpentine, &c., and believes these figures may become an indication of their purity. Ph. J. and Trans. v. 387, 495. A. J. Ph. xxxvi. 248, 343. Ch. N. 219. A. D. Circ. viii. 83.

C. Tomlinson has also experimented upon the appearances produced upon placing a drop of various liquids below the surface of water. Ch. N. 237.

MATERIA MEDICA.

VEGETABLE DRUGS.

RANUNCULACEÆ.

Aconitum napellus. T. and H. Smith have discovered a new alkaloid in aconite, which is named aconella. It does not appear to be poisonous, and in many of its physical and chemical characters, and in its atomic weight, it closely resembles narcotina. The irregular effects of commercial aconitia is probably owing in part to contamination with aconella. Ph. J. and Trans. v. 317. A. J. Ph. xxxvi. 173. A. D. Circ. viii. 102.

The identity of narcotina and aconella is further confirmed by the discovery by Prof. Jellett that their action is the same on polarized light. Ch. N. 230. A. J. Ph. xxxvi. 341. For additional remarks on the identity of these bodies, see Ch. N. 231.

Napellina, a body analogous to aconitia, though less powerful, has been obtained by Morson from aconite root. Ch. N. 231.

A crystalline deposit found in the tincture of aconite root, proved upon examination by G. Krehbiel to contain cane sugar and lime, thus confirming a similar observation made by Prof. Schroff in regard to this preparation and several of the narcotic extracts. A. J. Ph. xxxvi. 296.

Ranunculus acris. A case of poisoning by this plant in a child six years old is mentioned in Ph. J. and Trans. vi. 38.

MENISPERMACEÆ.

Cocculus palmatus, Wallich. Columbo root is derived from the plant thus named by *Wallich,* and not that of DeCandolle. Ann. and Mag. Nat. Hist. 1864. Ph. J. and Trans. v. 426.

BERBERIDACEÆ.

Podophyllum peltatum. The merits of this valuable American drug have been recognized abroad by its introduction into the new British Pharmacopœia.

Caulophyllum thalictroides, Michx. A. E. Ebert finds in the rhizoma two resins, one soluble and the other insoluble in ether, which together form the "Caulophyllin" of the Eclectics; and a substance analogous to saponin. Among the inorganic constituents are potassa, iron, magnesia, chlorine, sulphuric and phosphoric acids and silica. A. J. Ph. xxxvi. 203.

SARRACENIACEÆ.

Sarracenia purpurea. Wittstein describes the characteristic appearance of the genuine root stocks of this plant as met with in commerce. Vierteljh. Ph. xiii. p. 98. Dr. S. Mitchell reports a strong case in favor of the use of a decoction of the fresh root in small-pox. A. Med. Times. A. D. Circ. vii. 126. C. G. Logie speaks highly of a decoction of the root (1 oz. to Oj.) in 1 oz. doses every four hours in cases of confluent small-pox. A. D. Circ. vii. 107. Dr. A. N. McDowell has used a decoction of the *leaves* successfully in thirty-two cases of small-pox. A. Med. Times. A. D. Circ. vii. 188.

PAPAVERACEÆ.

Papaver somniferum, Linn. F. F. Mayer has applied his volumetric method for the estimation of alkaloids, viz., by means of a solution of mercuric chloride in iodide of potassium, to the assay of opium and its preparations. This author employs caustic baryta as the fixed alkali in the separation of morphia (with codeina and narceina) from narcotina and the like alkaloids. For details of this valuable paper, see A. Journ. Ph. xxxv. p. 385.

Poppy Capsules. Déschamps finds waxy matter, meconic, tartaric, citric, sulphuric, phosphoric, nitric, hydrochloric and silicic acids; ammonia, morphia; sometimes a little narcotine, papaverin, and a very weak base, papaverosine. Comptes R. Ch. N. 226.

Sanguinaria canadensis, Willd. F. F. Mayer estimates the alkaloid sanguinarina by his method of volumetric analysis. Am. J. Ph. xxxv. p. 401.

Chelidonium majus, Linn. F. F. Mayer estimates chelidonina by his alkaloimetric method. Am. J. Ph. xxxv. p. 401.

CRUCIFERÆ.

Iberis amara. The bruised seed of the candy-tuft is used by Dr. Wilks, as a good purgative medicine, in doses of four or five grains, in the form of pills. Med. Times and Gaz. A. D. Circ. viii. 123.

BYTTNERACEÆ.

Theobroma cacao. The fixed fatty acids present in butter of cacao have been found by Oudemans to be chiefly lauric (laurostearic) acid, with a little palmitic and myristic acids. The volatile acids are caproic, caprylic and capric acids, as previously stated by Fehling and Gœrgey. J. für Prak. Ch. J. de Ph. xliv. 270.

MALVACEÆ.

Gossypium herbaceum, Lin. The oil of the seeds, as found in commerce, may readily be purified, according to Lipowitz, by treatment with alkalies. Fifteen to twenty per cent. of the oil is thus rendered insoluble, and the remainder is left as a clear, yellow oil, without smell, and of a taste very similar to that of the best salad oil. Its sp. gr. is ·9206, and it congeals at 32° Fahr. The saponified portion yields to acids a buttery-like oil, suitable for soapmaking. N. Jahrb. Ph. xx. 530.

LINACEÆ.

Linum usitatissimum, Lin. W. B. Tegetmeier, in ascertaining the amount of oil in linseed oil-cake, finds bisulphuret of carbon a better extracting agent than ether. Chem. and Drug. A. J. Ph. xxxvi. 265.

Schütt concludes, from his experiments, that the seed-vessels of this plant contain a strongly narcotic poison, which in sheep affects the stomach and kidneys, and produces death. The stalks, deprived of their capsules, were not found to produce upon horned-cattle any other effect than that due to the mechanical irritation of their fibres. N. Jahrb. Ph. xxi. 165.

ZYGOPHYLLACEÆ.

Guaiacum officinale, Linn. In Trinidad the bark of the tree is considered more active than the wood or gum resin, and used accordingly. Ph. J. and Trans. v. 549.

RUTACEÆ.

Ailanthus glandulosa, Desf. Hetet's experiments with the powdered bark, aqueous and alcoholic extracts, volatile oil and resin indicate that, although able to drive out the tape-worm, they act so unpleasantly upon the general health as to make them of but very doubtful value as remedies. Their effects are similar to those produced by tobacco upon young smokers. N. Jahrb. Ph. xxi. 161.

ANACARDIACEÆ.

Rhus toxicodendron. Prof. Procter has found the eruption produced on the skin of many persons by this plant to be reduced by alkaline solutions, and the little blisters arrested at once by the application of Liq. Ferri Subsulph. Am. J. Ph. xxxv. p. 506. A. D. Circ. vii. 188.

Rhus succedanea. E. Simon publishes, in the Bulletin de la Société d'Acclimatation, an interesting account of the production of Japan wax from the seeds of this tree. 400 pounds of seeds yield 100 of wax. Ph. J. and Trans. 1863. Am. J. Ph. xxxv. p. 559. A. D. Circ. vii. 174.

VITACEÆ.

The Vine in California. The amount of wine made in this State in 1862 is stated to have been 700,000 gallons, showing a very great increase in its production within the last few years. Hunt's Merchant's Mag. A. D. Circ. vii. 175.

Vatting of Wine. Béchamp maintains the necessity of excluding the air during this process. If this precaution is taken, it may be continued two or three months without injuring the product. He has observed the germs of ferments in the scum which rises during fermentation, and attributes the injurious effect of the exposure to air at this time to their development and growth. Compt. R. lvii. 474. Ch. N. 222.

On the Climatology of the Vine. Jas. S. Lippincott reviews at length the climatic influences affecting the growth and ripening of the grape in the United States, and, assuming that the vine in this country requires an equal mean temperature during the fruiting season with the wine grape of Europe, draws an isothermal line of 65°, corresponding very nearly with the published experience of growers. Rep. Commissioner of Agriculture, Washington, 1863, 195.

SAPINDACEÆ.

Euphoria Litchi, Desf. The so-called Litchi or Ly-chee nuts, occasionally brought to this country from China, etc., are briefly described by Prof. F. F. Mayer. Having a grateful, sweetish, and slightly astringent taste, they are used to make a cooling drink in bilious and febrile affections. A. J. Ph. xxxvi. 295.

LEGUMINOSÆ.

Baptisia tinctoria. Prof. Bentley reviews the medical history and general characteristics of this plant. Ph. J. and Trans. v. 211.

Myroxylon Pareira, Kl. Additional information on the production of Balsam Peru, mainly derived from Dr. C. Dorat, of Sansonate, is contributed by D. Hanbury. Ph. J. and Trans. v. 241. A. J. Ph. xxxvi. 145. A. D. Circ. viii. 24.

The *natural* exudation of the tree from which Balsam Peru is artificially prepared is remarkable in containing no cinnamic acid. Dr. Attfield's examination shows it to consist of 77 parts resin, 17 gum, and a small quantity of volatile oil. Ph. J. and Trans. v. 248. A. J. Ph. xxxvi. 143.

Physostigma venenosum, Balf. The best method of using the alcoholic extract of the Calabar bean in ophthalmic surgery, is discussed by D. Hanbury. Streatfield's plan of applying bibulous paper, soaked with a suitable solution and dried, appears to be the most satisfactory. Ph. J. and Trans. A. D. Circ. vii. 123.

Dr. Harley's observations on its action on the eye and system generally, are published. Med. Times and Gaz. 1863. A. J. Med. Sci. 1863, 550.

Jobat and Hesse have obtained the active principle of this bean as a brownish-yellow, amorphous mass, existing in the cotyledons only. It is one of the most deadly of organic products, and produces remarkable contraction of the iris, even when applied after death. Ann. Ch. Ph. 1864. Ph. J. and Trans. v. 519. Ch. N. 222. The Calabar bean is now employed in several hospitals in England, as a remedy for chorea and certain nervous affections. Med. Times and Gaz. Ph. J. and Trans. v. 519. See also a paper by Dr. T. R. Frazer, A. D. Circ. viii. 65.

Cassia fistula. A long slender pod, sometimes found in packages of the pods of C. fistula, and much resembling them in appearance and medical properties, is traced by D. Hanbury to C. moschata, of New Grenada. Ph. J. and Trans. v. 348. A. J. Ph. xxxvi. 80. N. Jahrb. Ph. xxi. 129.

CORIARIACEÆ.

Coriaria thymifolia. The expressed juice of the berries of this plant turns upon exposure to such a permanent black color, that it has long been used as ink in Quito. Journ. Linn. Soc. No. 27. A. J. Sci. and Arts, xxxviii. 287.

C. myrtifolia. Riban has isolated the active principle coriamyrtin from the expressed juice of the leaves, in the form of colorless prismatic crystals, having the formula C_{40} H_{28} O_{16}. They are slightly soluble in water, soluble in boiling alcohol and ether, and of an intensely bitter taste. It appears to be a glucoside, and has proved itself a powerful poison when administered to dogs, etc., producing violent convulsions, ending in death. It contracts the pupil. J. de Ph. xlv. 487.

C. ruscifolia. A communication on the deleterious effects of the seeds and young shoots of this plant upon men and animals, by W. L. Lindsay, is published in Proc. Br. Ass. 1863. A. J. Ph. xxxvi. 257.

ROSACEÆ.

Rosa Gallica. Filhol states that the astringency of red roses is due in great measure to quercitrin. They also contain about 20 per cent. uncrystallizable sugar, some cyanin, and gallic acid, with but very little tannin. Rep. Ph. 1863. Ph. J. and Trans. v. 185.

Prunus domestica, L. J. B. Enz has obtained by distilling the kernels of the common plum, a water possessing all the characteristic properties of bitter almond water, and containing ·22 grain hydrocyanic acid in an ounce. Rep. de Ph. A. D. Circ. vii. 169.

Amygdalus communis, Lin., var. *amara.* Feldhaus finds the amount of amygdalin in bitter almonds to vary from 2·7 to 3·3 per cent. The method of estimation used was founded upon the formation of hydrocyanic acid, arising from its decomposition, which was weighed as cyanide. Arch. der Ph. 166, 52. Zeits. An. Ch. ii. 418.

CUCURBITACEÆ.

Cucurbita Pepo. A case of tapeworm, successfully cured by an emulsion of pumpkin seed is recorded in Chicago Med. Journ. A. D. Circ. viii. 125.

SAXIFRAGACEÆ.

Hydrangea arborescens. Prof. Bentley gives a brief history of the introduction of this American plant to the notice of the medical profession, and describes its chemical and therapeutic properties.

UMBELLIFERÆ.

Narthex assafœtida. Dr. Bellew states that the assafœtida produced in Affghanistan is obtained only from this plant, which grows wild on the hills about Herat and Furrah, and is never cultivated. The mode of collection, and usual manner of adulterating it, are detailed in The Technologist. A. J. Ph. xxxvi. 366. A. D. Circ. viii. 122.

To purify assafœtida, galbanum, and other gum resins of this family. Mayet recommends to heat them to boiling with two-thirds their weight of water, by which they become more or less emulsionized, and then to add sufficient alcohol to make a liquid of the strength of 60°. The clear solution thus formed is strained and evaporated on a water-bath to the proper consistence. J. de Ph. xliv. 35. Vierteljh. Ph. xiii. 257.

ARALIACEÆ.

Under the name of Japanese Lovage Root, a drug has lately appeared in the New York market, of the appearance of a contorted fleshy root, swelled into nodular tubers of from $\frac{3}{8}$ to $\frac{3}{4}$ inch in diameter, covered with a wrinkled brown skin, and of a pungent, sweetish, aromatic taste, which, in the absence of information in regard to its origin, is attributed by Prof. F. F. Mayer to a plant belonging to this natural family. A. J. Ph. xxxvi. 289.

CAPRIFOLIACEÆ.

Viburnum Lantana. J. B. Enz finds in the berries of this plant in their red and unripe condition, the following ingredients:—Tannic acid, valerianic acid, acetic acid, tartaric acid, bitter extractive, acrid and astringent matter, red coloring matter, sugar, gum, fixed oil, resin, wax and chlorophyll. Vierteljh. Ph. xii. p. 528. A. J. Ph.. xxxvi. 108.

RUBIACÆ.

Cinchona calisaya. Guilliérmond and Glénard, have found a yellow bark of very unpromising appearance to yield 6 per cent. quinia. They conclude from this that decisions upon the value of cinchona bark, based upon its physical characteristics, may be erroneous. Jour. de Pharm. Vierteljh. Ph. xii. 551.

Root bark of C. calisaya. J. E. Howard calls attention to the occurrence of the root bark of C. calisaya in the market, as a sophistication of the genuine article. It is comparatively valueless, analysis showing but 8·14 parts of purified alkaloids in 1000, of which only 3·06 parts were obtained as a crystalline salt of quinia. It may be easily recognised by its peculiar curly shape and other characteristics. Ph. J. and Trans. v. 342. A. J. Ph. xxxvi. 127. Dr. De Vry finds in the bark of the root of young cinchona plants, on the other hand, a much larger proportion of alkaloids than in the bark of the stem. Ph. J. and Trans. v. 593. A. J. Ph. xxxvi. 321.

C. succirubra. The cinchona bark grown in India has yielded to J. E. Howard 2·40 per cent. quinia, mixed with some cinchonidia, and ·60 per cent. cinchonia. He also obtained from the leaves ·11 per cent. of mixed alkaloids, and a large amount (about 4 per cent.) kinovic acid. Ph. J. and Trans. 1863. Am. J. Ph. xxxv. p. 516. A. D. Circ. vii. 184.

The Annual Report of Dr. Anderson, Superintendent of the government nursery at Durjeelong, India, states that nearly 5000 cinchona plants, mostly C. succirubra and C. pahudiana, were growing there in a flourishing condition at the middle of 1863. Calcutta Gaz. Ph. J. and Trans. v. 222.

Dr. De Vry, of Java, publishes his observations on the culture of the cinchona in Ceylon and India. He gives as the results of analysis of the young bark of C. succirubra an average of about 2 per cent. of the mixed alkaloids. In one instance, when the bark had been thickened by the growth of moss upon it, as much as 8·4 per cent. was obtained. The bark of the root was generally found to be richer than that of the stem. Ph. J. and Trans. v. 593.

C. nitida. A considerable quantity of bark, much resembling the calisaya in appearance, has recently appeared in the London market from Para. J. E. Howard states its total alkaloid strength to be but 2·8 per cent., much of which is quinidia. From this fact, its appearance, and the route it has apparently traversed, it is attributed to C. nitida of the Huanuco district. Ph. J. and Trans. v. 248. A. J. Ph. xxxvi. 89.

Cinchona in Java. According to official accounts the number of cinchona plants in the gardens of Java is 677,491, of which 669,540 are C. pahudiana; the rest being C. calisaya, lancïfolia and succirubra. N. Jahrb. Ph. xx. 83.

Dr. De Vry has published the results of an extensive examination of the barks of Cinchona grown in Java. In the bark of trees of C. calisaya from three and a half to ten years, the total amount of alkaloids in root and stem bark averaged about 2 per cent. In one specimen as much as 5 per cent. was found. In C. pahudiana, the average in the bark of the stem did not exceed ½ of 1 per cent., but in that of the root was nearly 2 per cent. (mostly quinia.) [The plants in Java, unlike those in the Ceylon gardens, are grown in a dense shade.] Ph. J. and Trans. vi. 15.

Cinchona in Jamaica. The experiment of propagating C. succirubra on the mountain slopes of this island have been very successful. The plants have grown six feet within two years, and about 1 per cent. of alkaloids have been obtained from the leaves. Jam. Guardian. Ph. J. and Trans. v. 512. A. J. Ph. xxxvi. 357. A. D. Circ. viii. 124.

Cinchona in Ceylon. The cultivation of C. succirubra, officinalis, micrantha and calisaya is succeeding admirably in the Hakgalle Gardens, the number of plants now growing there having been increased to upwards of 20,000. Ph. J. and Trans. v. 515.

Destruction of the Cinchona Forests in S. America. Dr. Scherzer in the "Voyage of the Novara," denies that the extermination of the cinchona is near at hand; and states that throughout a large district lying to the south of La Paz, 8 to 10,000 hundred weight of bark could be collected annually, without the least danger of extirpating the tree. A. J. Ph. xxxv. 125. A. D. Circ. vii. 155.

Preparations of Cinchona. Guilliérmond recommends, in order to overcome the irregularity in the strength of these preparations, the employment of a normal powder of cinchona, made by mixing good and poor barks of a certain alkaloid strength, from which an alcoholic extract is to be made containing about 15 per cent. of quinia, which is to be used as the basis of all other preparations. J. de Ph. xliv. 117. A. J. Ph. xxxv. 15. A. D. Circ. viii. 24.

Kinovic Acid has been found by Dr. De Vry in the dried juice of C. succirubra, but unaccompanied by any trace of alkaloids. Ph. J. and Trans. v. 596.

Dr. De Vry states that the acid discovered by C. B. Mœns in a species of Nauclea, and called by him naucleic acid, is kinovic acid. Ph. J. and Trans. vi. 19.

This substance has been used as a substitute for quinia in Sumatra, in sixty-five cases of intermittent fever, in the great majority of which with perfect success. It has also been satisfactory in the treatment of diarrhœa and dysentery, from its tonic properties, and its power of diminishing the secretion of the intestines. Dr. De Vry recommends a tincture of cinchona leaves, which contain a considerable amount of it as a remedy for the jungle fever in India. Ph. J. and Trans. vi. 18.

Formation of the Alkaloids in Cinchona. J. E. Howard remarks on the probable presence of quinia in the circulating sap, and the change it undergoes in the leaves and in the cellular tissue of the bark. Jour. Bot. Ph. J. and Trans. v. A. J. Ph. xxxv. 516. A. D. Circ. vii. 184.

Amount of Quinia in different cinchona barks. Guilliérmond has published a table of the per centage of this alkaloid in several varieties of bark, as ascertained by his method. Schweiz. Zeitsch. Ph. 1863, 41. N. Jahrb. Ph. xx. 320.

Valuation of Cinchona. Dr. C. Claus recommends exhaustion with water acidulated with sulphuric acid, and the precipitation of the alkaloids by calcined magnesia. From the dried precipitate, quinia is extracted by ether, and the cinchonia by alcohol. The alkaloids thus obtained are not entirely pure, being contaminated with a little extractive matter, but the rapidity of the process, and its large yield, recommend it to favor. Ph. Zeitsch. f. Russl. i. No. 24. Vierteljh. Ph. xiii. 244.

Caffea arabica. Zwenger and Siebert have discovered the presence of kinic acid in coffee—a fact several years ago considered probable by Dr. Stenhouse, from the odor of kinone produced when an extract made with lime water was distilled with sulphuric acid and black oxide of manganese. Java coffee contains about one-third of one per cent. A. D. Circ. viii. 24.

COMPOSITÆ.

Pyrethrum carneum. Jos. Hanaman, in examining genuine insect powder, which is the comminuted flower heads of this plant, finds no santonine, nor other alkaloid, nor any poisonous principle. The power of destroying insect life depends on a volatile oil, which possesses this property in a high degree; but has only a transient disturbing effect upon persons of a nervous temperament. Vierteljh. Ph. bd. xii. p. 522. A. J. Ph. xxxvi. 108.

Prof. Koch shows that the insecticide effects of Persian insect powder are due to a volatile oil residing in the pollen. N. Jahrb. Ph. xx. 155. A. D. Circ. viii. 32. A. J. Ph. xxxvi. 313.

P. Willemoti, Duchartre. C. Willemot describes the introduction and culture of this valuable species in France. Ph. J. and Trans. v. 172. A. J. Ph. xxxvi. 66. A. D. Circ. viii. 5.

Petasites officinalis. A decoction of the root is recommended in Germany as a remedy for the *milzbrand* of cattle, with Fowler's solution. N. Jahrb. Ph. xx. 99.

Artemisia absinthium, Linn. Tichanowitsch has found in the leaves of this plant, malic, succinic and tannic acids and the resin absinthin; the latter body was present in the leaves collected at all times of the year; the others at certain seasons were not to be found. Zeitsch. f. Ch. Ph. 1863, 197. A. D. Circ. viii. 24.

The oil of wormwood has been noticed to produce poisonous but not fatal effects in doses of three to eight grammes. Trembling, stupor, epileptic convulsions and stertorous breathing were among the symptoms. Ch. N. 228. A. J. Med. Sci. 1864, 484.

Taraxacum dens-leonis, De Candolle. The intercellular substance in the root is, according to Vohl, pectose, derived from the metamorphosis of the cellulose. J. Prakt. Ch. xci. 96. J. de Ph. xlv. 362.

STYRACEÆ.

Styrax Benzoin. Kolbe and Lauteman state that the acid in gum benzoin supposed to be toluylic acid is resolved into a mixture of two parts benzoic acid and one part cinnamic acid. J. de Ph. Ph. J. and Trans. v. 77.

SAPOTACEÆ.

Isonandra Gutta. Gutta percha may be bleached by dissolving 1 part in 20 parts hot benzole, shaking the solution with one-tenth part of freshly-calcined plaster occasionally for two days. The clear liquid is then decanted and poured into double its bulk of strong alcohol, when the gutta percha is precipitated as a white tenacious mass. A. D. Circ. viii. 85. A. J. Ph. xxxvi. 377.

MYRSINACEÆ.

Saoria picta. Küchenmeister speaks very favorably of the fruit of this Abyssinian plant as a mild and agreeable cathartic. N. Jahrb. Ph. xx. 100.

PLANTAGINACEÆ.

Plantago major. The juice of this plant has been found useful in curing a dog bitten severely by a rattlesnake. The juice was given freely internally, and also applied externally. Buffalo Med. and Surg. Journ. A. D. Circ. viii. 105.

SCROPHULARIACEÆ.

Digitalis purpurea, Linn. The volatile alkaloid in this plant, which appears to possess its medicinal properties, lately discovered by W. Engelhardt, is of an oily consistence, soluble in alcohol and pure ether; slightly soluble in chloroform. It may be extracted in the same manner as conia. N. Jahrb. Ph. xix. 29. A. J. Ph. xxxvi. 126.

Dr. B. H. Stadion states that the therapeutical effects of digitalina is about thirty times as great as that of the leaves, and that in most cases its dose should not exceed one-sixth of a grain. Its medicinal properties are also described. Vierteljh. f. Prakt. Heilk. A. J. Med. Sci. 1864, 220.

CONVOLVULACEÆ.

Exogonium purga. Guibourt describes two new falsifications of jalap which have appeared in the French market. J. de Ph. xliv. 495.

SOLANACEÆ.

Nicotiana tabacum. Dr. Richardson briefly reviews the effects of tobacco upon the health, particularly as used by smokers. Lancet. A. D. Circ. vii. 188.

The seed has yielded to Brandt neither nicotia nor propylamin, though the latter appears in the solid aqueous extract, probably as a product of decomposition. A fixed oil, a protein-like substance, resin, sugar, gum, tannic and oxalic acids are among its constituents. Vierteljh. Ph. xiii. 161.

Solanum pseudo-capsicum. J. M. Maisch finds it probable that an alkaloid exists in the berries of this plant. A. J. Ph. xxxvi. 99.

Datura tatula, which has been regarded as a variety of D. stramonium, has been stated by Dr. Veagh, of Dublin, to be far superior to it as an anti-spasmodic, though less narcotic. A. D. Circ. viii. 103.

Datura stramonium. Two cases of poisoning in children by the seeds of this plant successfully combated by opium are recorded in A. J. Med. Sci. 1864, 553.

Lycium barbarum. Drs. Huseman and Marmé have succeeded in obtaining an alkaloid from the leaves of this plant by means of phospho-molybdic acid, and also by phospho-tungstic acid. Lycina is remarkable for its great solubility in water, deliquescing readily upon exposure to air. Its sulphate and other salts act in like manner. It is also soluble in alcohol, but not in ether. Ann. Ch. Ph. 1863, 383. A. J. Ph. xxxvi. 225.

GENTIANACEÆ.

Erythræa centaurium. Méhu has succeeded in obtaining a crystallizable substance from this plant, which he calls Erythrocentaurin. It is not yet satisfactorily shown to be its bitter principle. It is colorless and tasteless. Its bright colorless crystals change by exposure to light, first to an orange and then a red color. Vierteljh. Ph. xii. p. 558.

APOCYNACEÆ.

Nerium oleander. J. Lukomski finds in the leaves and twigs a bitter, resinous yellow substance, possessing powerful purgative properties, which he names oleandrin. Rep. Ch. appliq. iii. 77. Vierteljh. Ph. xiii. p.92.

Dr. Kurzack has also examined this shrub, and finds the flowers, as well as the leaves and wood, to contain a poisonous principle; to which strong coffee and tea are recommended as antidotes. N. Jahrb. Ph. xx. 158.

Wrightea anti-dysenterica, R. B. The seed of this plant, which is in high repute in India in the treatment of diarrhœa, &c., has been examined by Dr. J. Stenhouse, who finds in it a bitter principle, soluble in hot alcohol and dilute acids, precipitable by infusion of galls, &c. It has not yet been obtained in a crystalline form. The name of wrightine is proposed for it. Ph. J. and Trans. v. 496. A. J. Ph. xxxvi. 349.

OLEACEÆ.

Ligustrum vulgare, Linn. Kromayer has discovered syringin in the bark of this plant. Arch. Ph. cxiii. 19. Vierteljh. Ph. xiii. 273.

Ornus Europæa, Pers. The commercial varieties of manna have been examined by several competitors for the prize of the German Apothecaries' Union, whose analyses are published in N. Jahrb. Ph. xxi. 138.

CHENOPODIACEÆ.

Chenopodium album, Linn. H. Reinsch has obtained, by dialysis, from the juice of this plant a peculiar substance, which, when separated by boiling water from chlorophyll, appears as a yellowish powder, possessing the repulsive taste of the plant in high degree. Under polarized light this body exhibits a black cross, resembling that shown by Iceland spar,—an appearance believed to have been hitherto unobserved in the vegetable kingdom. N. Jahrb. Ph. xx. 268.

H. Reinsch prefers, upon further experiment, to obtain chenopodin from the alcoholic tincture, prepared by acting upon the expressed juice freed from the coagulated chlorophyll with absolute alcohol, from which it is obtained nearly pure by spontaneous evaporation. When pure, this body is a yellowish-white powder, of a dull taste, nearly insoluble in cold water, insoluble in ether and indifferent towards acids and alkalies. N. Jahrb. Ph. xxi. 132.

LAURACEÆ.

Camphora officinarum, Nees. A note on the production and commercial history of Formosa Camphor, by R. Swinhoe, was read before the British Association, 1863. Ph. J. and Trans. v. 280. A. J. Ph. xxxvi. 31. A. D. Circ. viii. 6.

PIPERACEÆ.

Piper cubeba. A new resinous acid, named cubebic, is announced by W. Bernatzik, and its mode of preparation and properties described. Wochenblatt Gesellsch. Aerzte Wien, 1863, 27. N. Jahrb. Ph. xx. 97.

Pas and Groenewegen have described a berry lately brought into the market as cubebs, from which it differs in the depth of the color it yields to water in which it is soaked, the color of its volatile oil and its behaviour towards sulphuric acid. Pas considers it to be the ripe berry of P. cubeba; Groenewegen thinks it may be the product of P. anisatum. J. de Ph. d'Anvers. N. Jahrb. Ph. xxi. 161. A. D. Circ. viii. 103.

Artanthe elongata, Miq. Prof. Bentley has examined a matico, lately appearing in the British market from Central America, closely resembling the officinal species in physical, chemical and medicinal properties, but which appears to be the leaf of A. adunca, Miq. Ph. J. and Trans. v. 290. A. J. Ph. xxxvi. 118. A. D. Circ. viii. 104.

EUPHORBIACEÆ.

Rottlera Schimperi, Buckner. The bark known in commerce as Musena Bark, formerly believed to be that of the Brayera anthelmintica, and which has frequently been used with kousso in the treatment of tape-worm, has lately been examined by C. Thiel, who finds in it an active ingredient resembling saponin. N. Jahrb. Ph. 1863, 374. Ph. J. and Trans. v. 184. A. J. Ph.

Ricinus communis. Prof. R. V. Tuson has extracted from castor oil beans a new alkaloid, which he calls ricinine. It is prepared from the aqueous extract of the beans by means of boiling alcohol, from which, upon partial evaporation and cooling, it crystallizes in an impure state. It is colorless when pure, soluble in water and alcohol; insoluble in ether and benzole. It has also been obtained from castor oil by treatment with water. It does not appear, however, to possess marked medicinal properties, since two grains administered to a rabbit proved neither poisonous nor aperient. J. Chem. Soc. Ch. N. 230. Ph. J. and Trans. vi. 35.

[H. Bower has suggested (A. J. Ph. xxvi. 207) that the active principle of the castor oil bean may be produced like hydrocyanic acid, by the reaction of emulsin and an amygdalin-like body. May not the substance described above correspond to the amygdalin of the almond ?]

C. Tomlinson details some interesting observations on the peculiar appearance which a drop of castor oil assumes when on the surface of water, arising from the conflicting cohesiveness of the oil and the adhesiveness of the water. The similarity of the " cohesion figure" produced by different samples of this oil suggests the probability that it may be used as a test of its purity. Ph. J. and Trans. v. 387, 495. A. J. Ph. xxxvi. 248, 343.

URTICACEÆ.

Humulus lupulus, Linn. Dr. J. C. Lermer finds three distinct crystallizable substances in lupulin. One of these, believed to be its bitter principle, possesses acid properties, and, when dissolved in weak alcohol, has a pure, intensely bitter taste, resembling precisely the bitterness of beer. It is perfectly insoluble in water, but readily soluble in ether, alcohol, chloroform, benzole and bisulphuret of carbon. Its crystals are at first brittle and colorless, but change by exposure to the air to a soft mass resembling lupuline. It is believed to exist in considerable quantity in the hop. Its composition is given as $C_{32}H_{25}O_7$. A considerable quantity of myricin was also obtained from lupulin. Dingler's Polyt. J. Vierteljh. Ph. xii. p. 504.

In the ashes of the dried strobiles, of which 100 parts yield 8·501 parts, Dr. J. C. Lermer finds the following constituents: Potassa 17·093, soda 3·975, chloride of sodium 3·855, carbonate of lime 12·042, magnesia 5·615, alumina ·763, oxide of iron 2·078, sulphuric acid 4·605, phosphoric acid 15·1, silica 23·13, carbonic acid 11·23 per cent. Vierteljh. Ph. xii. 182.

Prof. Artus states that hops may be preserved for years by packing them in jars, adding water enough to wet them thoroughly, pouring off the superabundant water after standing some time, and then mixing with the moist residue sufficient sugar to make it of a syrupy consistence. Thus prepared, they should be kept in well-closed vessels in a cool place. N. Jahrb. Ph. xxi. 172.

Canabis sativa var. *indica.* Among the Aschira and other negro tribes on the West coast of Africa, the smoking of hemp leaves has been observed by Wagner and DuChaillu to be largely carried on, and to be followed by very injurious results. N. Jahrb. Ph. xx. 35.

Antiaris toxicaria. A dangerous case of poisoning by the juice of the Upas is reported in the Abeille Med. Ch. and Drug. 1863. A. D. Circ. vii. 175.

Artocarpus integrifolia, L. The fruits of this plant, under the name of Paradise-nuts, have recently been noticed by Prof. F. F. Mayer in the New York market. They are said, by Descourtliz, to be used in Jamaica as a substitute for almonds in medicinal preparations, the emulsion of the kernels being permanent in that climate. A. J. Ph. xxxvi. 292.

CONIFERÆ.

Pinus palustris. Dr. L. W. Liersch has performed a number of experiments on the poisonous effects, upon the lower animals, of the vapor of oil of turpentine diffused in a room. B. and F. Med. Chir. Rev. 1863. A. J. Med. Sci. 1863, 428.

Larix. Dr. Headlam finds a tincture of the inner bark of the larch very useful in certain stages of bronchitis. A. J. Med. Sci. 1864, 521.

NAIADACEÆ.

Zostera marina. The leaves of this plant, known as sea grass, have yielded to E. Baudrimont the very large amount of 23·28 per cent. of ash, for analysis of which see Journ. de Ph. et de Chemie, xlii. 388. Vierteljh. bd. xii. p. 543.

ORCHIDACEÆ.

Vanilla aromaticum. The occurrence of poisoning by vanilla ice in Vienna having been investigated by Prof. Schroff, it is suggested that its cause may be due to the presence of an acrid resinous fluid, which, existing in the cavities of the seed-vessel of the Anacardium occidentale, may have contaminated the oil derived from the seeds of this plant, which, under the name of Acajon oil, is frequently used to rub the pods with to make them soft and pliable in S. America and Mexico. Others suppose the acrid substance may reside in the prismatic crystals found in the parenchyma of the pod, which have been generally considered as simply oxalate of lime. Allgemeine Wien. Med. Zeit. Bost. Med. and S. Journ. A. D. Circ. viii. 11.

IRIDACEÆ.

Crocus sativus, Willd. Guibourt has described an adulteration amounting to 25 to 30 per cent. of the drug, consisting of the stamens of another species of Crocus, which had been artificially colored and twisted to resemble the genuine stigmas. The fraud is readily detected by immersing the mixture in water, on which the stamens, being lighter, float to the surface; and are deprived of their artificial coloring. The ligulate florets of the marigold, similarly prepared, have likewise been met with as an adulteration. J. de Ph. xlv. 469.

MELANTHACEÆ.

Colchicum autumnale. J. M. Maisch has experimented upon the solubilities and boiling-point of a brownish oil obtained by acting upon the seed by dilute alcohol. A. J. Ph. xxxvi. 98.

Veratrum viride. J. M. Maisch was not able to find veratria in the dead stalks of this plant, but noticed the occurrence of a saponaceous principle in them. A. J. Ph. xxxvi. 98.

V. viride and *album.* Prof. Schroff finds a great similarity in their chemical, structural and therapeutical characteristics. The rhizomes, freed from the roots, were found to produce reflex spasms only, while the root itself caused convulsions, paralysis, and in small animals death. V. album is stated to be also like the American variety in not producing diarrhœa. Jervia is contained in the roots, but not in the rhizome. Both species reduce the circulation and respiration, and contain veratria. Sitzungsbericht der Akad. Wien. A. D. Circ. viii. 88.

G. Krehbiel finds cane sugar and lime in a crystalline deposit formed in the fluid extract of the root. A. J. Ph. xxxvi. 296.

Dr. S. R. Percy's prize-essay upon the natural history, chemistry, pharmacy and therapeutical application of this drug is published in Transactions Amer. Med. Asso. vol. xiv.

GRAMINEÆ.

Lolium temulentum. Baillet and Filhol, in a paper upon this plant, describe the poisonous effects of its seed upon man and the lower animals, etc. Journ. Veter. du Midi. J. de Ph. xliv. 281.

Phalaris canariensis. Jos. Hanaman finds in the dry Canary seed, fat 5·30, resin and extractive 5·42, dextrin and sugar 2·44, starch 54·45, protein compounds 18·75, cellulose 9·65, mineral constituents 5·19, traces of citric and oxalic acids. The air-dried seeds contained 11·5 per cent. moisture. Viertelj. Ph. xii. 517. A. J. Ph. xxxvi. 108. A. D. Circ. viii. 44.

LICHENES.

Rocella tinctoria. Dr. J. Stenhouse contributes additional researches on the chemistry of this lichen. Proc. Royal Soc. xii. 263. Ch. N. 191.

Goa Powder. A resinous substance highly valued in India, under this name, in cutaneous diseases, has been examined by D. S. Kemp, who finds its solubilities and physical properties to resemble those of the archil-like products. More information in regard to this substance is wanted. Ph. J. and Trans. v. 345. A. D. Circ. viii. 43.

FUNGI.

The fungous growths affecting the stalks of cereals, which at times exhale the odor of cured herrings, have been observed by Ritthausen to contain propylamina. It has been before shown that this alkaloid is present in the smut of maize and ergot of rye—fungous growths upon the grains of cereals. A. D. Circ. vii. 187.

Cryptogamic growths. Ozone has been shown by M. Carey Lea to promptly check the development of mould. This observation is an important one in connection with the probable relation between fungous germs and putrefaction and malarious diseases. A. J. Sci. and Arts, xxxvii. 373.

Spermœdia clavus, Fries. W. T. Wenzell has obtained from the cold aqueous extract of spurred rye, two bodies acting like alkaloids, which are named provisionally ecbolina and ergotina, neither of which, nor their salts, were isolated in a crystalline form. The ecbolina taken by the author in doses of ½ grain was found to affect the brain and nervous and muscular systems, while upon woman it acted with great energy. Ergotina does not appear to possess the same activity. These alkaloids are believed to exist in combination with the volatile ergotic acid. Propylamina was also found existing as a phosphate. A. J. Ph. xxxvi. 193.

Boletus laricis. The presence of a white, crystalline, bitter principle, soluble in alcohol, insoluble in ether, and very slightly soluble in water, is announced by Schoonbroodt in the white agaric. It contains no nitrogen, and appears to be a glucoside. Agaric was found to contain by Schoonbroodt 20 per cent. of this body, 40 of a resin soluble in ether, 5 of extractive matter, and 35 of ligneous matter. J. de Med. Brux. 1863, 597. Vierteljh. Ph. xiii. 227.

ANIMAL DRUGS.

MAMMALIA.

Sus scrofa, Linn. J. M. Maisch has met with lard which has been intentionally mixed with $\frac{1}{8}$ its weight of water, for the purpose of making it white. The water is frequently kept from separating from the fat by a little carbonate of potassa or borax. A. J. Ph. xxxvi. 101. A. D. Circ. viii. 63.

Lard is highly recommended as an application to fresh burns by Dr. Packard. A. J. Med. Sci. A. D. Circ. viii. 29.

Bos Taurus, Linn. Dr. Vogel has proposed an apparatus for ascertaining the proportion of water in milk, founded upon the opacity of pure milk to light, by which accurate results are readily obtained. A. D. Circ. viii. 10.

C. Hoyerman recommends the valuation of milk by ascertaining the amount of butter it will yield by agitation in a bottle after having been previously heated and cooled. Good milk should thus yield at least 2 per cent. of butter. Arch. de Ph. cxvi. 130. N. Jahrb. Ph. xxi. 173.

AVES.

Phasianus Gallus. Roussin has experimented upon the possibility of substituting in the place of the carbonate of lime in the egg-shell, and the chloride of sodium found normally in the yolk, substances isomorphous with these bodies, by mixing them with their food. In this way he has succeeded in obtaining eggs containing a notable quantity of the alkaline bromides, iodides, and fluorides, and suggests that this observation may be usefully applied therapeutically. Several of the alkaline earths and oxides of heavy metals have also thus been introduced into the shells. Gaz. Med. de Paris, 1864. A. J. Med. Sci. 1864, 217.

PISCES.

Gadus morrhua. Dispinoy, of Lille, finds the fluid which escapes during the fermentation of the cod-liver in the preparation of the oil, to be richer in propylamine, ichthyoglycene, iodine, phosphorus, etc., than the oil itself. An extract prepared from it and given in pills was found to be useful in chlorosis, indigestion, etc., but inferior on the whole to the oil. Bull. de Thér. lxiii. 545. Ph. J. and Trans. v. 521. A. D. Circ. viii. 122.

E. Janota finds in the watery matter which separates from the oil upon long standing, chlorine, iodine, phosphoric acid and propylamina. N. Jahrb. Ph. xxi. 161.

The absence of foreign fat in the ordinary tanner's oil may be detected by mixing in a high glass vessel, 1 part of the suspected oil and 2 parts concentrated sulphuric acid. If the fat is present the mixture becomes turbid, otherwise it remains clear. Schweiz. Zeits. 1863, 29. Zeits. An. Ch. ii. 444.

INSECTA.

Apis mellifica. For the melting points of Japan wax and some other substances proposed as substitutes for bees-wax, see a paper by B. S. Proctor, Chem. and Drug. 1863. A. J. Ph xxxv. 527.

Adulterations of wax. Reynolds notes the practical inaccuracy of the various methods proposed for the quantitative determination of the adulteration of wax. Robinaud's ether test appears to be the best proposed. Ph. J. and Trans. v. 260.

Honey. Kraut states that bees fed exclusively upon the grape-sugar of commerce produce a honey which is hard, yellowish, less sweet than wild honey, and which contains only dextrogyric sugar. Ordinary honey is a mixture, in equal proportions, of right and left sugars. Zeitsch. Ch. Ph. vi. 359.

J. de Ph. xliv. 361. A. J. Ph. xxxvi. 112. A. D. Circ. viii. 45.

Cantharis vesicatoria. Mortreux proposes to estimate cantharides by exhausting them in fine powder by chloroform or ether, and treating the solid matter obtained by the spontaneous evaporation of the tincture with bisulphuret of carbon, in which cantharidin is insoluble, to remove fatty matters. 40 grammes thus treated yield from 18 to 22 centigrammes of cantharidin. By means of alcohol the crystals may be further purified. J. de Ph. xlvi. 33.

PROTOZOANS.

Sponge. In order to bleach sponge, Artus recommends to immerse them for some hours in a warm dilute solution of soda, then, after being well washed, to suspend them for two days in a bath of weak hydrochloric acid, containing about 6 per cent. of hyposulphite of soda. They are afterwards to be well washed and dried. Moniteur Sci. J. de Ph. xliv. 212. Ch. N. 219.

MINERALS.

Carbonate of soda. Prof. Haines describes the occurrence of a mineral deposit containing 51 per cent of this substance along the sea-shore of the south-east of Arabia near Aden. Its amount is practically unlimited. Lond. Ph. J. 1863. A. J. Ph. xxxv. p. 445. A. D. Circ. vii. 169.

Chloride of Sodium. An important deposit of this substance has lately been discovered on the island of Petite Anse, in Vermillion Bay, La. It is near the surface, and of remarkable purity. Dr. J. L. Reddell, of New Orleans, found its composition to be in 100 parts chloride of sodium 98·88; sulphate of lime ·76; chloride of magnesium ·23; chloride of calcium ·13. The deposit is of the Tertiary age. Am. J. Sci. and Arts, vol. xxxvi. p. 308. Am. J. Ph. xxxv. p. 557.

Sulphur. The present commercial sources of sulphur, both as crude sulphur and sulphurous pyrites, and its consumption on the Tyne, are described. Ch. N., 1863. A. J. Ph. xxxvi. 141.

The annual yield of sulphur from Italy alone is stated to be 300,000 tons, having increased ten-fold since 1830. The production, &c., of the different provinces is detailed in Mon. Sci. v. 799. Ch. N. 225.

Gypsum in large quantities and of great purity has been discovered near Grand Rapids, on the Detroit and Milwaukie Railroad, Michigan, and is now being extensively quarried. A. D. Circ. viii. 37.

The mineral waters of several springs in Nova Scotia have been chemically examined by Prof. How, of Windsor, N. S. Ch. N. 221.

The Harlow Car Spring waters from near Harrowgate, England, have been analysed by D. S. Muspratt. Ch. N. 228.

Petroleum. The discovery of this body in considerable quantity, at several different points in the Michigan, viz.:—Albion, Paw Paw, Dexter, Niles, Benien Co., &c., is announced, and efforts are being made to investigate the extent and character of the oil-bearing rocks. A. D. Circ. viii. 109. It has now been discovered in Pennsylvania, Virginia, Ohio, Kentucky, Indiana, Illinois, Michigan, New York and Canada.

Pelouze and Cahours have continued their investigation of this substance. In addition to 8 carbides of hydrogen previously announced, they have discovered four others, all of the series of which marsh gas is the first term. In no specimen examined was true benzine discovered. Compts. R. Ch. N. 190.

Chlorides of Potassium and Magnesium. A mineral called carnallite, found near Stassfurth, in Saxony, has been shown to contain 1 part chloride potassium, 2 chloride magnesium, and 12 of water. Ch. N. 231.

The water of the Johannesbrunn mineral spring has been analysed by Dr. Daubrawa. Vierteljh. Ph. xii. iv.

MEDICINAL CHEMICALS.

INORGANIC COMPOUNDS.

NON-METALLIC ELEMENTS.

Flores Sulphuris. F. A. Flückinger states that hyposulphurous acid is frequently found even in well washed sublimed sulphur. Vierteljh. Ph. 1863, 321. A. J. Ph. xxxvi. 23.

Dr. Renard speaks highly of the beneficial effects upon himself of sulphur dusted inside the stockings in a case of tendinous rheumatism. L. Union Méd. J. Med Sci. 1864, 523.

Iodine. Dr. Rosenthal, of Vienna, has published investigations in regard to the therapeutical properties of iodine. Wien. Med. Wochensch. A. D. Circ. vii. 187.

Dr. B. W. Richardson finds that the offensive air of a sick chamber can be rendered completely inodorous by the diffusion of the vapor of iodine in it. By this means the organic matter appears to be destroyed. Med. Times and Gaz. A. J. Med. Sci. 1864, 546.

Bromine. The value of a solution of bromine in the treatment of hospital grangrene has been illustrated in one hundred and fifty-two cases reported by Dr. M. Goldsmith. When exposed in the sick room for a short time undiluted, it proves an excellent disinfectant. A. Med. Times, 1863. A. J. Med. Sci. 1863, 564. See also report of Dr. W. Thompson. A. J. Med. Sci. 1864, 378.

Bisulpuret of carbon. The very injurious effects upon the health of the workers in this substance are described in Social Sci. Rev. A. J. Ph. xxxv. 355. A. D. Circ. viii. 32.

ALKALIES AND THEIR COMPOUNDS.

Sodæ chloras. This may be prepared from bitartrate of soda and chlorate of potassa, by a formula prepared by Bussy, Grandeau and Baudrimont. Jour. Chém. Med. 1863. Am. J. Ph. xxxv. p. 509.

Sodæ hyposulphis. E. J. Reynolds gives tests for this substance, and describes their comparative delicacy. Br. J. Photography. Ch. N. 210.

The chlcrides, iodides, bromides and sulphurets, which have been officinal in the French Codex, have been the subject of a special study, and a report by Boullay, Boudet and Lefort. See J. de Ph. xliv. 499.

Potassæ permanganas. For a method of preparing this salt, by passing oxygen gas over a heated mixture of binoxide of manganese and caustic potassa, proposed by Bussy, Grandeau and Baudrimont, see Jour. Chém. Med. 1863. Am. J. Ph. xxxv. p. 510. This salt in solution is recommended as a stain for wood. N. Jahrb. Ph. xx. 169. A. J. Ph. xxxvi. 379.

Böttger also communicates an improved process for the preparation of this compound. Vierteljh. Ph. xiii. 221. See also Dr. Attfield's remarks. Ph. J. and Trans. v. 632.

Potassii ferrocyanidum. A. Gélis describes a new method for preparing this salt, founded upon the mutual reactions of CS_2, $NO_4 S$ and KS. Ann. du Conservatoire des Arts, &c. iii. 50. Vierteljh. bd. xiii. 109.

Potassæ carbonas, prepared by igniting 2 parts saltpetre and 1 of charcoal is found, by O. Wirsching, to be nearly chemically pure. N. Jahrb. Ph. xx. 16. A. J. Ph. xxxvi. 107.

Potassii Cyanidum. Dr. Schwartz recommends the purification of the commercial article, containing carbonate and cyanate of potassa, by means of sulphide of carbon. Bresl. Gewerbebl. 1863, 11. Ch. N. 190. A. D. Circ. viii. 13.

Potassii Bromidum has been successfully used by H. Behrind in larger doses in producing sleep. Lancet, 1864. A. J. Med. Sci. 1864, 219.

Potassii Iodidum. An examination of ten samples of this salt, from the leading manufacturers in England and the continent, has been made by F. C. Clayton, who finds not less than 96 per cent. of the iodide in any of them. The chief impurities were chlorides, carbonate and iodate. The method employed was the preparation of a strong solution by nitrate silver, washing, drying and weighing together the mixed iodide and chloride, and determining the chlorine separately and deducting it. Ph. J. and Trans. v. 461.

Potassæ Picras. Dr. Friedrich, of Heidelberg, recommends this substance as a remedy for tapeworm. Arch. Pathol. Anat. u. Phys. A. J. Ph. xxxvi. 86.

Potassæ Bichromas. Chevalier and Bicourt describe the mischievous effects often produced upon the workmen employed in its manufacture. Upon the abraded skin, it proves a persistent caustic, penetrating even to the bone, and frequently affects the moist membrane of the nose and other organs with destructive ulceration. Ann. d'Hygiene Pub. 1863. A. J. Med. Sci. 1864, 278.

Potassæ Carbonas, free from silica, is obtained by Rieckher by evaporating a solution of the carbonate, free from the sulphate, to dryness, moistening the residue with carbonate of ammonia, and again evaporating. By this exposure to heat the silica passes into its insoluble form, and is left behind upon again dissolving. J. Ch. Med. 1863. A. J. Ph. xxxvi. 21.

Potassæ Hypophosphis. Dr. F. D. Lante, of West Point, has tried this salt in a number of cases of phthisis, without perceiving those marked, prompt and positive effects ascribed to it by its inventor, Dr. Churchhill. A. Med. Times. A. D. Circ. vii. 155.

ALKALINE EARTHS AND EARTHS.

Magnesiæ Citras. Hager prepares a soluble salt by mixing 40 parts of powdered citric acid with 25 parts carbonate magnesia, by means of sufficient alcohol of sp. gr. ·833 to make a thick mixture. This is then allowed to stand several hours, and dried at 113° F. H. Hager also discusses the composition and solubilities of the sparingly soluble forms of this salt. Ph. Centralhalle. A. J. Ph. xxxvi. 18. A. D. Circ. viii. 24.

Aluminæ et Potassæ Sulphas. Sautier-Lacroze details his experiments with an aluminous and silicious mineral called alunite, from the Puy de Dôme, resulting in the economical production of alum. J. de Ph. xlv.

HEAVY METALS.

Manganesii Sulphas. Bussy, Grandeau and Baudrimont propose the following formula for this salt. Take of black oxide of manganese 1 part, commercial protosulphate of iron 1 part. Mix intimately by contusion and trituration, and expose to a red heat in an earthen crucible. Pulverise the mass, and exhaust with boiling water, and evaporate the liquid to dryness. Re-dissolve the residue in hot water, filter, evaporate and crystallize. Journ. Chim. Méd.

Black oxide of Manganese, in a purified form, is highly recommended by Dr. A. Leared, in doses of from 5 to 30 grains, in the treatment of habitual uneasiness in the stomach following the ingestion of food. A. J. Med. Sci. 1864, 519.

Ferri Sulphas. Protosulphate of iron may be well preserved, according to Baudt, by reducing the crystals to a coarse powder, drying them thoroughly between blotting paper at a gentle heat, and keeping them in a well-closed bottle. Oxidation is believed by Baudt to be due to the water contained between the laminæ of the crystals. J. de Ph. xlvi. 46.

Ferri Albuminas. E. R. Smith proposes an improved formula for this chalybeate, viz.: Mix thoroughly the whites of three eggs with 2 f. oz. water, add 1 f. oz. sol. tersulphate iron, and 75 grs. caustic soda, previously dissolved in 2 oz. water, with constant stirring, until the precipitate dissolves. Pour on a muslin filter, and add syrup until twelve fluidounces are obtained. E. R. S. also gives formulæ for Ferri et Potassæ Albumin. and Ferri Sodæ et Potassæ Albumin. Ch. N. 192.

Ferri et Sodæ Pyrophosphis. A. Lehmann, of Moscow, gives a formula which furnishes a perfectly white product. N. Jahrb. f. Ph. A. D. Circ. vii. 169.

The following formula for the solution is proposed: Take of pure iron filings 1 part, aqua regia q. s., dissolve, add sulphuric acid 66° B. 3 parts, evaporate to dryness, and add distilled water 100 parts. Make a solution of crystallized pyrophosphate of soda 17·92 parts and distilled water 280. Mix the liquids and filter if necessary. J. de Ph. xlv. 73.

Ferri et Magnesiæ Citras. The hydrated oxide from 3¼ oz. persulphate of iron is dissolved in 3 oz. citric acid, and the solution then carefully saturated with carbonate of magnesia. The solution is then filtered, evaporated to a syrup and the salt obtained as scales in the usual way. N. Rep. f. Pharm. xii. 442. Ch. N. 227.

Zinci Chloridum. Chloride of zinc, when once combined with water, cannot be rendered perfectly anhydrous, even when exposed to a heat equal to that of melting zinc. Ch. News, 188.

Chromates. In cases of poisoning by chromate of potassa and other chromates, J. Nicklés recommends the use of acetate or lactate of iron to reduce the chromic acid to insoluble sesquioxide. J. de Ph. xliv. 263.

Acidum Chromicum. Safarick describes the preparation and properties of this unstable compound. Zeitsch. für Ch. u. Ph. vi. 474. J. de Ph. xliv. 543.

Bismuthi Subnitras. M. de Smedt dissolves 120 parts of the metal in nitric acid, adds to the hot solution 80 parts of alcohol, evaporates, and again adds the same amount of alcohol. A violent effervescence follows the addition of alcohol, requiring that the mixture should be well stirred. The whole is then gently evaporated to dryness, washed with distilled water and powdered. In this way 181 parts of the pure compound have been obtained from 120 parts of metal. J. de Ph. d'Anvers. Rep. de Ph. xx. 13.

Bismuthi Subcarbonas and *Subnitras.* Prof. Procter comments on the steps in the processes for making these preparations as officinal in U. S. Pharmacopœia, 1860. A. J. Ph. xxxvi. 302.

Bismuthi Oxidum. A convenient mode of administering this metal is in that of a solution of the freshly-precipitated oxide in a boiling solution of citrate of ammonia; a preparation of such strength that 1 fluidrachm represents 3 grains oxide, has been recommended by C. A. Tichborne, in Ph. J. and Trans. v. 301. A. J. Ph. xxxvi. 161. A. D. Circ. viii. 88.

Hydrarg. Chlorid. Corr. A case of poisoning, in which two scruples of this substance had been swallowed, was successfully treated by Dr. J. C. Johnston, of Baltimore, by a bolus of half a book of gold leaf and a drachm of metallic iron. Med. and Surg. Journ. Ch. N. 193.

ORGANIC COMPOUNDS.

CYANOGEN COMPOUNDS.

Schlagdenhauffen has published some interesting experiments upon the decomposition of the compounds by the galvanic current. J. de Ph. xliv. 100.

Test for Cyanides. Dr. A. Froehde has performed a number of experiments upon the mutual action of the hyposulphite of soda and the cyanides. When a cyanide is fused with hyposulphite soda, a sulpho-cyanide is produced, which is readily recognized by its blood-red coloration with perchloride of iron. Upon this reaction, the author founds a very delicate test for the cyanides, even when present in very small quantity. The sulphocyanide of sodium can thus be readily prepared on a large scale. One part of ferrocyanide of potassium is mixed with 3·5 parts crystallized hyposulphite soda, the mixture is dried and heated to complete decomposition; hot alcohol then removes the sulphocyanide. Pogg. Ann. 1863, 317. Ch. N. 196. A. J. Ph. xxxvi. 125. Zeits. An. Ch. ii. 361.

Potassii Ferrocyanidum. Some experiments by Lee and Richardson on the yield of this compound are reported in Ch. N. 201. A. J. Ph. xxxv. 78.

W. H. Hutchinson proposes refuse gluten and nitrogenous matter from the starch factories as a source of cyanogen for the manufacture of prussiate potash. They may either be melted together with the potash in a retort or open vessel, from which the prussiate is obtained by lixiviating the mass, or by destructive distillation; the products of their combustion may be obtained and carried over a mixture of charcoal and potash, heated to redness in a second retort. Ch. N. 215.

Acidum Hydrocyanicum. Bussy and Buignet, in detailing their experiments upon the production of this acid, state that when prepared as usual from the ferrocyanide potassium and sulphuric acid, the amount obtained corresponds nearly with that required by calculation, while in the decomposition of cyanide of mercury by hydrochloric acid, the yield is less than the theoretical amount; in the latter case the circumstances being favorable to the production of formiate of ammonia. The acid prepared by the former method they find to be also more stable than the other, both in its dilute and anhydrous state; and that the change which finally takes place is much accelerated by exposure to light. No cyanogen compound is to be found among the products of its dedomposition. J. de Ph. xliv. 465. A. J. Ph. xxxvi. 313.

Millon has shown that the alteration which the pure acid undergoes is due to the presence of ammonia, and thus explains the well known effect of sulphuric acid in preventing the change. Comptes R. liii. 842. Ph. J. and Trans. v. 562.

Bussy and Buignet notice a strong affinity between this acid and certain salts by which its boiling-point is affected, and a separation of the liquid into distinct layers, containing different amounts of acid, is produced. Corrosive sublimate, by aqueous hydrocyanic acid, is converted into protochloride and metallic mercury. J. de Ph. xlv. 369.

To the affinity between corrosive sublimate and hydrocyanic acid, these chemists attribute the discrepancy betwen the theoretical and practical yield in the process of Gea Pessina; a portion of the acid being retained in the retort by the corrosive sublimate formed during the reaction. The addition of one equivalent of sal ammoniac enables ninety-five p. c. of the whole amount to be obtained,—a larger proportion than by the process of Gay Lussac. J. de Ph. xlv. 289.

Cyanide of Potassium. The impure commercial article is assayed by Flujolet by means of a standard solution of ammonide of copper. Mon. Sci. v. 78. Ch. N. 229.

ORGANIC ACIDS.

Acidum tannicum. In a memoir which has received a silver medal from the Society of Medical Sciences of Brussels, Dr.

Leriche states, that pure tannic acid, properly administered, is an excellent anti-periodic, possessing real efficacy in the treatment of simple quotidian fevers; and that from the facility of its extraction, low price and its innocuousness, it is the best of indigenous febrifuges. Journ. Chim. Med. 1863. A. J. Ph. xxxv. p. 512. Ch. N. 222. A. D. Circ. viii. 89.

Carbolic Acid. An interesting paper on the properties of phenic acid, the chief constituent of commercial creasote, as an antiseptic, and its action on plants, the lower animals and man, by Dr. J. Lemaire, is published in Moniteur Sci. iv. 649; Ch. N. 192; A. J. Ph. xxxv. 552; A. D. Circ. viii. 25. The therapeutical effects of this acid in a number of cases of disease arising from fungous growths, and as an application to ill-conditioned ulcers, &c., are detailed by C. Calvert. Lancet, 1863. A. J. Med. Sci. 1864, 229. A. D. Circ. vii. 170.

Phloridzin. Dr. D. Ricci has found this substance useful in the treatment of atonic dyspepsia in females and children, and recommends it in cases where quinia, salicin and iron are inadmissible. Dub. J. Med. Sci. 1863. A. J. Ph. xxxvi. 85.

ETHERS AND ALCOHOL.

Sweet Spirits Nitre. Dr. Rieckher proposes to estimate the nitrous compound in this preparation by means of nascent hydrogen, disengaged from pure zinc and hydrochloric acid, in Marsh's apparatus. The ammonia thus formed at the expense of the nitrogen is weighed as the chloride of platina and ammonium. N. Jahrb. Ph. xx. 13. A. J. Ph. xxxvi. 107.

According to Feldhaus, sweet spirits nitre may be economically prepared by distilling a mixture of nitrite of potassa, sulphuric acid and alcohol in definite proportions. Ann. Ch. Ph. cxxvi. 71. N. Jahrb. Ph. xx. 93. A. J. Ph. xxxvi. 312.

Chloroform when in contact with caustic soda may be preserved, according to Boettger, exposed to the light for an indefinite period. Polyt. Notizbl. xix. 31. J. de Ph. xlv. 368. Ph. J. and Trans. vi. 39.

Anæsthesia produced by chloroform has been much prolonged by Prof. Nussbaum by the subcutaneous injection of a solution of a grain of acetate of morphia. A. J. Med. Sci. 1864, 221.

Nitrite of Amyle. Dr. B. W. Richardson states that this body is capable of producing a remarkable suspension of animation in the lower animals, which has been continued for nine days, and followed by perfect recovery. Its effects upon man, however, are so very intense, that it cannot be recommended for therapeutical use. The inhalation of a very small amount of its vapor causes an instantaneous flushing of the face; and subsequently affects the brain and muscular system. Proc. Br. Asso. 1863. Med. Times and Gaz. 1863. A. J. Ph. xxxvi. 266. A. D. Circ. viii. 125.

Alcohol. Antoni again calls attention to the fact that alcohol (80° Tralles) is not strengthened, but weakened, by exposure in bladders when the temperature is low, (from 36° to 56° Fahr.) Archiv. d. Pharm. lxii. 129. Vierteljh. Ph. xiii. p. 102.

Brandy. Berthelot states that the proportion of the acids always existing in brandies becoming changed by age into compound ethers, depends entirely upon the relative quantities of water and alcohol the brandy contains. In strong brandy as much as two-thirds of the acid may finally become etherified, while in weaker brandies the proportion is less. The bouquets of wine vinegars are likewise thus liable to increase by age Compt. R. 64, 77. J. de Ph. xlv. 314.

ORGANIC ALKALOIDS AND OTHER BODIES.

Ferri et Quiniæ Iodid. M. Smedt believes that he has prepared this salt as a definite chemical compound. Journ. de Chim. Med. A. J. Ph. xxxv. 508.

Ferri et Quiniæ Sulphas. Thirty parts crystallized sulphate iron are dissolved in 180 parts distilled water, and 30 parts sulphate quinia with a few drops of dilute sulphuric acid added. The liquid is now evaporated till a film begins to form, and is then set aside to crystallize. A white double salt is then obtained, of a very bitter and astringent taste, and slightly soluble in water and alcohol. Zeitsch. f. Ph. N. Jahrb. Ph. xx. 316.

Quiniæ Tannas. Dr. Smedt calls attention to the fact that a larger amount of tannic acid is required to precipitate this salt from the acetate of quinia than its composition warrants; and, attributing this to the presence of the liberated acetic acid, recommends the use of the tannate of ammonia as the precipitant. (J. d. Anvers.) J. de Ph. xliv. 133. A. J. Ph. xxxv. 17. N. Jahrb. Ph. xxi. 153.

Quiniæ Sulphas. Sulphate of quinidia has been observed in England to have been sometimes fraudulently sold for sulphate of quinia. Ph. J. and Trans.

External use of Quinia. Dr. R. Giese reports two cases of gangrenous sores in which quinia was used with success as a local application, and recommends its use in other cases requiring stimulating applications. A. J. Med. Sci. 1864, 507.

Aconitia. Liegeois and Hottot notice the frequent occurrence in the commercial alkaloid of a crystallizable substance, (probably the aconella of T. and H. Smith, since identified with narcotina,) and give a process for obtaining the pure aconitia from the root.

The substance sold under this name on the continent is sometimes of very inferior quality. Three grains were given to a dog without any effect. Barreswill supposes it may contain some peculiar principle like asparagine, and even sulphate of lime. J. de Ph. xliv. 130. Ch. N. 203. A. J. Ph. xxxvi. 59.

The chemical reactions and physiological properties of pure aconitia are further examined by E. Hottot. J. de Ph. xlv. 30, 304. A. J. Ph. xxxvi. 309.

Strychnia, Antidotes to. Dr. T. D. Mitchell briefly states the evidence of the occasional therapeutic incompatibility of strychnia with no less than ten of our most powerful medicinal agents. Can. Lancet. A. D. Circ. vii. 143.

Prof. R. Bellini considers that the best antidotes for strychnia are tannic acid, chlorine and the tinctures of iodine and bromine. Chlorine he believes mitigates the effects of strychnia even when they are diffused through the system. Pyrogallic acid also retards the effects of the poison, it is believed, by astringing the mucous surface, and thus preventing, in some degree, its absorption. Br. Med. Jour. A. J. Ph. xxxvi. 128. A. D. Circ. viii. 89.

Sulphate of Atropia. Laneau prepares this compound by dissolving 2·89 grs. crystallized atropia in 8 grs. absolute alcohol by the aid of gentle warmth, and adding to it carefully 1·85 parts of a mixture of sulphuric acid with ten times as much absolute alcohol, or until exactly neutralized. The saturated solution is then spontaneously evaporated. J. de Ph. xliv. 132. Vierteljh. Ph. xiii. 280.

Santonin. Dr. J. Camera speaks highly of the benefit resulting from the long-continued administration of santonin in nephritic colic. N. Jahrb. Ph. xxi. 165.

CHEMISTRY.

INORGANIC CHEMISTRY.

OXYGEN.

Ready method of preparing Oxygen. The liberation of oxygen in a nearly pure condition, by the addition of a dilute mineral acid to a mixture of peroxide of barium and bichromate of potassa, is recommended as a prompt and convenient plan of preparing this gas for inhalation, or for use in a sick room, &c. Ph. J. and Trans. v. 436. A. J. Ph. xxxvi. 241. A. D. Circ. viii. 102.

The physiological action of Oxygen upon the lower animals, as deduced from experiments carried on for many years by Dumarquay and Leconte, is described in Comptes R. J. de Ph. xliv. 154.

OZONE.

Prof. Meissner's researches upon oxygen, ozone and antozone, published in an octavo of 370 pages, must be consulted by those who seek a detailed history of the discoveries and theories in relation to this subject made known up to 1862. Prof. Meissner's own experiments show the action of electricity upon air results in the cotemporaneous formation of both ozone and antozone, which, by being passed through a solution of iodide of potassium, may be separately obtained, the former being absorbed by the solution. Nitric acid was found to be produced by electrifying moist air, and also to be produced by the admixture of nitrogen with electrized oxygen. Neither ozone nor antozone alone had the power of thus oxidizing nitrogen to nitric acid.

The action of phosphorus upon moist air results in the production of both ozone and antozone ; the former, however, is mainly consumed by the subsequent action of the phosphorus, and antozone is left nearly pure. The white persistent fumes which are evolved when phosphorus is burned under a bell glass, also consist largely of antozone. Antozone, it is stated, also occurs in considerable quantity in the smoke of ordinary flames, and may be recognized when the products of combustion are collected in a suitable receiver, by its peculiar misty-like appearance. Tobacco smoke and the smoke of smouldering fires contain antozone in large quantity. These experiments do not confirm the assertion that nitrite of ammonia is a universal product of combustion. See an abstract by Prof. Johnson in A. J. Sci. xxxvii. 325.

Ramon de Luca states, that whenever chemical action takes place in the presence of air, oxygen is ozonised. Ozone may be detected in the air of a bottle, within which sulphuric acid and water have been brought into contact. In some cases of chemical combination, the ozone may be recognized by its smell. Prepared papers which have become blued by ozone, may be again whitened by hydrogen. Ann. Ch. Phys. 1863, 182. Ch. N. 190. A. D. Circ. viii. 7.

Soret, in a note on the volumetric relations of ozone, supposes that one molecule of this body contains three atoms of oxygen,—as a binoxide of oxygen. This hypothesis is believed to explain the constancy of volume of ozone when treated by oxidizable bodies, and its expansion by heat. He also shows that when produced by electrolysis it is not an oxide of hydrogen. Comptes R. lvi. 390. Ch. N. 202. Ann. Ch. Ph. cxxvii. 38.

Action in Organic Substances. Gorup-Besanez has continued his experiments in this direction. The changes taking place in organic bodies under the influence of ozone, resemble closely those which they undergo in the animal organism. Ann. Ch. Ph. cxxv. 207. Ch. N. 205. A. J. Ph. xxxvi. 166. A. D. Circ. viii. 40.

Use in Ventilation. M. A. Morin believes that active oxygen is produced by the dispersion of water in fine division through [illegible] atmosphere, and calls attention to the advantages of a current of *humid* air for ventilating and purifying crowded rooms. Comptes R. lviii. 720, 63. Ch. N. 211. A. D. Circ. viii. 30.

Dr. Delabrousse recommends the constant production of ozone by means of a spiral platina wire made incandescent by a Bunsen's pile, as a disinfectant in the sick room. Br. Med. Jour. A. D. Circ. vii. 188.

Influence of Ozone on Vegetation. M. Carey Lea's experiments show that seeds, after germination, do not flourish in an atmosphere of ozone, and that their rootlets have a constant and remarkable tendency to turn upwards instead of downwards. It was observed to promptly check the growth of mould. A. J. Sci. and Arts, xxxvii. 373. A. J. Med. Sci. 1864, 281.

Ignition of inflammable substances produced by Ozone. The ozone liberated from a few drops of a mixture of 2 parts of well dried powdered permanganate of potassa and 3 parts hydrated sulphuric acid, is sufficient, according to Prof. Böttger, to explode oil of turpentine, and inflame certain other essential oils, also alcohol, ether, benzine, wood spirit, &c. Permanganate potassa triturated with tannic or gallic acid, causes their combustion. Vierteljh. Ph. xiii. 225.

Test for Ozone. Werther states that a solution of an alkaline vanadiate acidulated with sulphuric, nitric, or hydrochloric acid, becomes colored red by the addition of oxygenated water, or ozonized oil of turpentine. This coloration is not so distinct in the atmosphere of ozone produced over phosphorus, or when it is liberated from the peroxide of barium or bichromate of potassa by sulphuric acid. J. Prakt. Ch. lxxxiii. 195. J. de Ph. xlv. 551. [In the latter cases, according to the researches of Meissner, antozone largely predominates.]

HYDROGEN.

Water. Robinet states that the principal saline matter found by him in rain water, collected near Paris, was sulphate of lime, as much as 20 grammes having been obtained from a cubic metre of water. This water likewise contained, as usual, some organic matter, and gave rise to a reddish deposit with nitrate of silver, after the lapse of some time. Comptes R. Ch. N. 198.

Purifying Potable Waters. Kersting proposes to remove lead from water containing it by filtering it through a layer of charcoal, of which he states six to eight grains are sufficient to purify completely five litres of water charged with lead by long standing in a leaden reservoir. Dingler's Polyt. J. clxix. 183. J. de Ph. xliv. 460.

Lefort discusses the part which oxygen, nitrogen and carbonic acid play in rendering water agreeable to the taste; as well as the effects produced in spring-water by exposure to air and by filtration as regards its fitness for household uses. J. de Ph. xlv. 126.

Vapor of Water as a Disinfectant. From the experiments of M. A. Morin, it appears that when water finely divided, as in passing through a sieve, is projected into the atmosphere, the humid air thus produced acts upon iodised starch paper after the manner of active oxygen. Traces of acid, probably a nitrogen compound, are likewise to be observed after the lapse of some time. If, as is believed by some, both of these bodies have the power of destroying the organic germs which are present in ill-ventilated apartments, the explanation is obvious of the beneficial effects which experience has shown, particularly in England, to result from the introduction of air thus artificially moistened into crowded buildings. Comptes R. lviii. 730. A. D. Circ. viii. 30.

Boiling of Water. W. Grove has observed the curious fact that when distilled water, deprived of air by ordinary means, is boiled, a certain amount of nitrogen is given off. This and the fact that bromine on boiling liberates oxygen, not yet explained, make it probable that a chemical and not merely a physical change accompanies this operation. Ch. N. 225.

Purifying Water from Organic Matter. Peligot's experiments show, that among metallic salts, the perchloride of iron is particularly efficient in precipitating organic matters from solution, and thus acting as a disinfectant. When too large a quantity of the perchloride is used, a precipitate is not produced. Comptes R. Ch. N. 231.

Permeability of Iron to Hydrogen. Deville and Troost find that this gas at a high temperature passes with great facility through a wall of iron of the thickness of three to four millimetres. Galignani. A. J. Sci. and Arts. A. J. Ph. xxxvi. 326.

NITROGEN.

Nitrous Acid. Kolbe has repeated his experiments upon the combustion of hydrogen in a mixture of oxygen and nitrogen, which confirm his previous statements as to the production of nitrous acid under these circumstances in notable quantity. Sitzungsb. Ak. Wissensch. München, 1863. N. Jahrb. Ph. xx. 149.

Protoxide of Nitrogen. This gas is now largely used by dentists and others for the purpose of producing anæsthesia. It is claimed that it is safer than chloroform or ether, being admissible when there is organic disease of the lungs or heart, and that consumptives have even been benefitted by its use. The method of making and using it is discussed in Dental Cosmos, 1863. A. D. Circ. viii. 30. See also A. D. Circ. vii. 171.

Nitric Acid. The injurious effect of inhaling the fumes of this acid has lately been painfully illustrated by the death of Prof. Stewart, of Edinburgh, and his laboratory assistant, from having remained for an hour in a room charged with its vapors. N. Jahrb. Ph. xx. 37.

Atmospheric Air. Robinet states the following liquids are able to hold in solution a considerable amount of air, which may be obtained upon boiling them, and is again reabsorbed upon cooling and exposure. By boiling, petroleum yielded (by volume) 6·8 per cent. oil of lavender 6·89, benzine 14, oil of turpentine 24·18 per cent. Comptes R. Ch. N. 228.

CARBON.

Carbonic Acid in the Atmosphere. Carefully performed experiments, Dr. H. E. Roscoe states, have shown that the amount of this gas present in the atmosphere of Manchester, England, differs but little from that of the surrounding country, the mean quantity being 3·9 parts in 10,000. This agrees very nearly with what has been concluded, from Saussure's experiments, to be the average quantity in the atmosphere,—viz.: about 4 volumes in 10,000. Ch. N. 219.

Méne's conclusions on this subject are published in Comptes R. A. D. Circ. viii. 47.

SILICIUM.

Alloy of Silicium. A new alloy, consisting of copper with about five per cent. of silicium, has lately been experimented with by Deville and Caron. It is of a fine bronze color, perfectly ductile, and can be more readily worked than bronze. Its tenacity is equal to that of iron. It may be made by fusing together a mixture of sand, sodium and copper, with some common salt and fluor spar as a flux. Ch. N. 197.

Winkler's experiments are published in J. Prakt. Ch. xci. 193. J. de Ph. xlv. 553.

Compounds with Oxygen and Hydrogen. F. Wöhler publishes his investigations on some new compounds of silicium. Ann. Ch. Ph. 1863, 257. Ch. N. 201. J. de Ph. xliv. 540. A. J. Sci. and Arts, xxxvii. 120.

SULPHUR.

Sulphuric Acid. T. Macfarlane has patented a process for its manufacture. See *Soda.*

T. MacFarlane has also patented a method for obtaining this acid by calcining together iron pyrites, sea salt and peroxide of iron. Hydrochloric acid and sulphate soda are by-products. Canad. Naturalist, 1863. Am. J. Sci. xxxvi. p. 270.

Action of Sulphur on Ammonia. F. A. Flückiger's experiments show the formation of hyposulphite of ammonia in considerable quantity by the action of sulphur upon a solution of ammonia, sp. gr. ·885, at 100° C. J. M. Maisch considers this salt probably the mono-hydrated hyposulphite. See details of experiments. Vierteljh. Ph. 1863, 321. A. J. Ph. xxxvi. 23.

Sulphur, by the addition of a small quantity of chlorine or iodine, has been rendered by Dissenbacher as soft and flexible as wax, so as to be capable of being rolled out into thin sheets. A. D. Circ. vii. 153.

PHOSPHORUS.

Tercyanide. This compound has been formed by Hübner and Wehrhane by the reaction of cyanide of silver and subchloride of phosphorus. It appears in snow white crystals, which decompose upon heating in the air. Ann. Ch. Ph. cxxviii. 254. N. Jahrb. Ph. xxi. 155.

CHLORINE.

Hydrochloric Acid. For a process of manufacture, patented by T. Macfarlane, see *Soda.*

Chlorates. Dr. Rieckher suggests that, owing to the reduction of these salts by nascent hydrogen in Marsh's apparatus, with formation of chloride of zinc when sulphuric acid is used, their amount may thus be readily estimated. N. Jahrb. Ph. xx. 13. Sestini has already taken advantage of this fact in the valuation of chlorate of potash, in a mixture previously shown to be free from metallic oxides, alkaline earths and soda. Zeitsch. An. Ch. 1862, 500. Ch. N. 194.

BROMINE.

Perbromic Acid has been readily prepared by Kæmmerer, by acting on perchloric acid by bromine. It behaves towards certain reagents very much like its congeners, perchloric and periodic acids. J. f. Prakt. Ch. xc. 190. J. de Ph. xlv. 106. Ch. N. 230.

The Bromides have been satisfactorily prepared by F. Klein from hydrobromic acid, made as suggested by Liebig in regard to iodine, from the action of bromine, phosphorus and water. Ann. Ch. Ph. cxxviii. 237. A. D. Circ. viii. 24.

IODINE.

The spontaneous separation of iodine from the water of the Adelheid spring has been noticed by Wittstein, who attributes it to the decomposition of iodide of ammonium, either existing in or produced in the water. Vierteljh. Ph. xiii. 180.

FLUORINE.

Hydrofluoric Acid. Kessler recommends the application of acetate of ammonia to the burns caused by this acid. In places difficult to reach, as, for instance, under the nails, caustic ammonia may be used. Rep. de Ch. app. 1863, 220. Ch. News, 188.

THALLIUM.

Prof. R. Böttger states that the mixture of various salts obtained from the saline waters of Nauheim, by evaporating the mother liquors after the crystallization of the chloride of sodium, contains thallium. This is probably one of the richest sources known of cæsium and rubidium, with which he considers thallium to be constantly associated in saline mineral waters. Vierteljh. Ph. xii. p. 535. A. J. Ph. xxxvi. 108.

W. Crookes and Prof. A. H. Church contribute a paper on the preparation of the sesqui- and protochloride, and on the behaviour of protox. thallium towards benzamide. Ch. News, 187.

Prof. Mulder is stated to have found thallium in a mineral water in Java, esteemed by the natives for its medicinal value. Ch. News. 187. A method for its estimation, by permanganate potassa, is given by Willm. J. de Ph. xliv. 283. Lamy has noticed the poisonous effects of thallium salts upon the lower animals; great pain and convulsions, terminating in death, having been produced. J. de Ph. xliv. 285. Ch. N. 196.

This metal has been obtained in quantities of several pounds' weight by Wm. Crookes, from the carefully purified sulphate. When pure its sp. gr. is 11·9, and it is so soft as to be easily scratched by lead. From the magnificent green-colored intense flame, it is suggested, if cheaply prepared, as an excellent lighthouse signal. See Paper presented to Brit. Association, 1863. Ph. J. and Trans. v. 280. A. D. Circ. viii. 7.

Paulet concludes from his experiments on the physiological action of thallium upon the lower animals, that it is a more energetic poison than lead. It enfeebles the respiratory and locomotive organs, and its peculiar effects are produced when applied externally to the skin, or by subcutaneous injection. When death results, the proximate cause appears to be asphyxia. Comptes R. Ch. N. 198. A. D. Circ. viii. 7.

W. Crookes describes the preparation and properties of the nitrate and perchlorate, Ch. N. 203; phosphate, Ch. N. 205; carbonate, Ch. N. 206; sulphate, 207; chromate, 208; acetate, 210; oxalate, 213. J. Nicklès describes iron and thallium alum. J. de Ph. xlv. 24, xlv. 142. W. Crookes gives the solubilities of several of its salts. Ch. N. 216. Thallium alum. Ch. N. 230. In addition to the fact of its existence in grape juice, chicory and tobacco, Böttger announces its discovery in kelp, thus showing it to be a constituent of sea-water. Böttger states, in the organic kingdom it is always associated with potassium compounds. N. Jahrb. Ph. xxi. 148. A general view of thallium and its salts is given in Zeits. An. Ch. ii. 201.

Böttger describes the discovery of this metal in the residues of certain sulphuric acid chambers. Ann. Ch. Ph. cxxvi. 175. N. Jahrb. Ph. xxi. 319.

POTASSIUM.

The insolubility of Carb. Potassa in a solution of ammonia and in alcohol has been examined by B. S. Proctor. Ch. N. 215.

Chlorate of potassa. The partial decomposition of chlorate of potassa, by evaporating its solution, has been again observed by Bottomley. The residue is faintly alkaline from the liberation of chlorine. Ch. N. 229.

Fluochromate of Potassa has been obtained by Streng, in well-defined red crystals, by acting upon bichromate potassa in a platina capsule by hydrofluoric acid. Ann. Ch. Ph. cxxix. 225. J. de Ph. xlv. 359.

SODIUM.

Soda. T. Macfarlane has lately patented in England, a process for the manufacture of soda, chlorine, hydrochloric and sulphuric acids, from sea-salt and sulphate of iron, founded upon the decomposition effected in these substances in intimate mixture by a red heat in a current of dry air. The chlorine thus liberated (with some nitrogen) is available for the preparation of bleaching salt. The residuary peroxide of iron and sulphate of soda, mixed with ground coal, and fused, yields to water carbonated and caustic soda. Sulphuric and hydrochloric acids are obtained by this patent, by introducing the chlorine evolved and the fumes of sulphur, into a jet of steam passing through a condenser, the mixed acids being separated by distillation. Canad. Naturalist, 1863. Am. J. Sci. xxxvi. p. 269.

Hydrate of Soda has been obtained in crystals by O. Hermes, by evaporating a solution, sp. gr. 1·385. Ch. Centrallbl. 1863, 720. J. de Ph. xliv. 544. A. D. Circ. viii. 24.

Nitrate of Soda. A carefully prepared table of the solubilities of this salt, in water of different temperatures, is given by Maumené. Ch. N. 216.

Hyposulphite of Soda. The relations of this compound to the oxides of nickel, cobalt, iron, zinc and manganese, are elucidated by the experiments of Dr. W. Gibbs. A. J. Sci. and Arts, xxxvii. 346.

CÆSIUM AND RUBIDIUM.

Bunsen describes (in Pogg. Annal. cxix. 1) a method for separating these two bodies, and the properties of some of their compounds. Am. J. Sci. xxxvi. p. 413.

Bunsen obtains metallic rubidium from its tartrate, and gives its sensible properties. Ann. der Chem. u. Ph. cxxv. 367. Vierteljh. Ph. xiii. p. 113.

S. W. Johnson and O. D. Allen ascertain the equivalent of cæsium to be 133, and describe its spectrum. A. J. Sci. and Arts, xxxv. 94. J. P. Cooke, jr., has examined the bitartrates under the spectroscope. A. J. Sci. and Arts, xxxvii. 70.

The rare mineral Pollux from Elba, has been found by Pisani to contain 34 per cent. of cæsia. Comptes R. lviii. A. J. Sci. and Arts, xxxviii. 115.

INDIUM.

This new metal is announced by F. Reich and Th. Richter, from an examination of two Freiburg ores, in which it occurs associated with arsenic, lead, copper, &c. Its name is derived from the beautiful blue line which it gives to the spectrum, and which first led to its detection; brief notices of its properties are given. J. für Prakt. Ch. lxxxix. 441, also xc. 192. Am. J. Sci. xxxvi. p. 416. A. J. Ph. xxxvi. 38. See note by J. Nicklés, J. de Ph. xliv. 534. Ch. N. 210. A. J. Ph. xxxvi. 168. A. J. Sci. and Arts, xxxvii. 269.

AMMONIUM.

Sulphocyanide of Ammonium. E. J. Reynolds describes a ready method for the preparation of this salt. Br. Journ. Photog. Ch. News. 188.

Decomposition of Chloride of Ammonium by boiling. Fittig's carefully performed experiments show that a solution of this substance becomes acid at the boiling point, by the elimination of ammonia. The amount of the latter evolved decreases, however, as the experiment is continued, probably by its union with the liberated acid. Ann. Ch. Ph. 1862, No. 1, 89. A. J. Ph. xxxvi. 111. Zeits. An Ch. ii. 349.

The insolubility of various salts in a solution of Ammonia has been examined by B. S. Proctor. Ch. N. 215.

Chloride of Ammonium. M. Hunt has applied for a patent for the manufacture of this substance, by passing a current of nitrogen, or atmospheric air, together with the hydrochloric acid gas, over burning coal or coak. Ch. N. 215.

Iodide of Ammonium. Dr. Jacobsen details the precaution to be observed in the preparation of this compound, from equivalent weights of iodide of potassium and sulphate of ammonia. N. Jahrb. Ph. xxi. 256. Ch. N. 227. A. J. Ph. xxxvi. 240.

BARIUM.

Permanganate of Baryta is prepared by Böttger by fusing together 2 parts of hydrate of potassa and 1 part black oxide of manganese, dissolving the mass in water, filtering through gun-cotton, and precipitating with chloride of barium. The violet blue precipitate of manganate of baryta is now to be carefully washed with distilled water, and transferred to a porcelain vessel containing a large amount of water, and exposed to a current of carbonic acid gas, until the solution acquires the intense purplish red color of permanganate of baryta. The liquid carefully filtered through gun cotton and evaporated in the exsiccator yields the salt in large crystals. Vierteljh. Ph. xiii. 221.

Sulphate of Baryta. J. Nicklés shows that this salt is slightly soluble in cold monohydrated sulphuric acid. When a few fragments of chloride of barium are added to the concentrated acid the sulphate formed remains dissolved, and is precipitated only upon the dilution of the acid. J. de Ph. xlv. 402.

CALCIUM.

This metal has been obtained by E. Sonstadt by placing a fused mixture of iodide of potassium and chloride of calcium into a crucible, above a nearly equivalent quantity of sodium, and heating to redness. Ch. N. 224.

Chlorinated Lime. C. Schrader gives some precautions necessary to be observed, in the manufacture of this article to secure a high per centage of bleaching chlorine, and that will not deteriorate much by keeping. P. Centralbl. 1863, p. 156. Chem. News, 193. Am. J. Ph. xxxv. p. 547. A. D. Circ. vii. 185.

Hydrate of Lime. Dr. Davy suggests that in air-slaked lime the compound consists of 2 parts lime to 1 water. The high temperature, produced in the wet method of slaking lime, it is suggested may be applied usefully in some blasting operations. Proc. Br. Asso. 1863. Ch. N. 198.

Hyposulphite of Lime may be prepared by adding a warm solution of 22 parts crystallized chloride of calcium to a warm solution of 25 parts of crystallized hyposulphite of soda in 30 of distilled water. Upon evaporating the liquid at not over 60° C., and separating the chloride of sodium crystallizing out, the salt may be obtained from the mother liquor in crystals, having the composition $Ca\ O, SO_2+6HO$. Ph. Centralhalle, 1864, No. 4. N. Jahrb. Ph. xxi. 148.

MAGNESIUM.

Dr. T. L. Phipson describes the behaviour of this metal towards certain other bodies. Being less volatile than potassium or sodium, it is capable of taking oxygen from silicic acid at a high temperature. Proc. Royal Soc. Ch. N. 231.

This metal is now coming into somewhat extensive use, as an illuminating agent, on account of its very vivid and highly actinic light. A wire of magnesium, ·297 millimetres in diameter, will give as much light as 24 stearine candles 5 to the pound. Its chemical effects are even greater (in comparison with sunlight) than its illuminating power. Photographs have been taken at night by means of its light. Ch. N. 223, 224. A. J. Sci. and Arts, xxxvii. 440. A. J. Ph. xxxvi. 337. A. D. Circ. viii. 136.

Sulphite of Magnesia is prepared by passing a current of sulphurous acid gas through a mixture of carbonate magnesia in 7 or 8 parts water. The salt crystallizes from the solution as MgO, SO_2+6 Aq. It has the peculiarity of being more soluble in cold water (80 parts) than in hot water (120 parts.) Pharm. Centralhalle, 1863. A. D. Circ. vii. 154.

Hyposulphite is prepared from 37 parts sulphate magnesia and 40 parts hyposulphite baryta. The solution must be evaporated at a temperature not exceeding 85° F. It is soluble in its own weight of water, and has the formula MgO, S^2O^2+6 Aq. Ph. Centralhalle. A. D. Circ. vii. 154.

ALUMINIUM.

An abstract of a paper, by J. L. Bell, of New Castle, England, on the manufacture, on a large scale, of this metal, is published in Ch. N. 202. See also a paper in the Sci. Amer. xi. 130.

Alumina has been obtained as shining hexagonal plates by

Schuch, from cryolite, by acting upon it at a white heat by hydrogen. Ann. Ch. Ph. cxxvi. 108. N. Jahrb. Ph. xx. 26.

Surgical Instruments composed of aluminium bronze, (95 parts copper, 5 aluminium) excepting the blades, have been favorably reported of to the Paris Soc. Surgery. The alloy is not oxidizable, preserves its brightness well, and may advantageously replace silver, iron, or steel in several cases. A. D. Circ. viii. 116.

MANGANIUM.

Caron finds from his experiments, that the presence of manganese in an ore of iron is of great advantage, on account of its power of expelling sulphur and often silicium. The amount of manganese, however, retained in the cast iron very much depends upon the flux and the temperature employed in reducing the ore. Comptes R. A. D. Circ. viii. 116.

Permanganic Acid. F. Kessler treats of its behaviour towards oxides of iron, arsenic and antimony. Pogg. Ann. cxviii. 17. Zeits. An. Ch. xi. 383.

IRON.

Test for Iron in Copper. When copper in thin leaves containing iron is put into contact with a cupric salt, in solution in sulphuric, nitric or hydrochloric acid containing a large excess of ammonia, the iron, even if in very small quantity, is precipitated as a yellow powder, very alterable by the air. This precipitate contains 198 parts protoxide copper to 1 part iron. Compt. R. Ch. N. 192.

Cast Iron. Wm. Crossly argues from his experiments, that there may exist in cast iron two carbides of iron, producing the difference between the white and gray varieties. The higher and more unstable compound being present in the white iron. Ch. News, 190. These views are attacked and discussed in Ch. N. 193, et passim.

Perchloride of iron. The cause of the violet color, which sulphydrate of ammonia forms with a solution of this salt upon evaporation, has been examined by Lebaigue, who finds it to result from its reaction with the hyposulphite ammonia, which is formed during the process. This coloration was formerly attributed to the supposed presence of phosphorus. J. de Ph. xlv. 122.

Theory of Steel. Caron attributes the combination of iron with carbon or other elements of the same family, by which tempered steel is formed, to the sudden shrinking of the mass analogous to the instantaneous compression produced by hammering. He has found that by hammering a bar of iron, heated to bright redness, on an anvil covered with powdered charcoal, spots of steel were produced on the surface of the bar. Comptes R. Jour. Frank. Inst. A. D. Circ. viii. 56.

Coloration of burning Iron by Phosphorus. E. J. Chapman states that the green color sometimes imparted to the blow-pipe flame on burning thin wire is due to the presence of phosphorus. Ch. N. 227.

COPPER.

Pure Copper. Millon and Commaille obtain copper entirely free from iron and arsenic, by boiling it in sulphuric acid, by which the arsenic is precipitated, and decomposing the solution containing a large excess of the salt, by the galvanic current, the copper thus deposited is absolutely pure. Compt. R. Ch. N. 192.

Non-Metallic Impurities in Refined Copper. Prof. F. A. Abel contributes a paper on this subject. J. Chem. Soc. Ch. N. 223, 224.

Arsenic in Copper. Dr. Odling recommends to purify copper from arsenic for use in medico-legal researches, &c., by heating a hydrochloric solution mixed with ferric hydrate or chloride to dryness. The arsenic is found as chloride in the sublimate. J. Chem. Soc. Ph. J. and Trans. v. 119.

Bronze. For several formulæ for the preparation of bronze powder, see A. J. Photography. A. D. Circ. vii. 110.

Quadrantoxide. Rose has isolated and described a very unstable compound, having the formula Cu_4O. Its discovery is of particular interest as one of a class of bodies but little known, and from its analogy to a similar compound of silver has a bearing upon the theoretical composition of the latter, and also upon the equivalent of silver. Pogg. Ann. cxxx. 1, 814. Ch. N. 207, 208. A. J. Sci. and Arts, xxxvii. 119.

A new quadruple Salt of Copper and Sulphurous Acid has been prepared by Peltzer, by mixing a solution of sulphate of copper saturated with ammonia with an equal amount of a solution of sulphate of copper saturated with hyposulphite soda; from this mixture the crystals are deposited upon agitation. J. de Ph. xlv. 101. A. J. Ph. xxxvi. 376.

Blowpipe reaction of Copper. Dr. B. W. Gerland calls attention to a beautiful ruby red color produced by copper under the deoxidizing flame in the borax bead. This reaction is extremely delicate, and is unaffected by other metals, which color the glass under the same circumstances, when not present in large enough quantity to render it opake. Ch. N. 219.

Sulphites. Millon and Commaille's researches upon these bodies, and the ammoniacal compound of the protochloride with bichloride platinum, are published in Comptes R. lvii. Ch. N. 217.

Suboxide of Copper is prepared by Böttger, by dissolving in 2 parts hot distilled water, 1 part crystallized sulphate copper, 1½ parts tartrate potassa and soda, and 2 parts cane sugar; when the solution is complete, and tartrate of copper formed, adding 1½ parts caustic soda. By boiling the mixture the suboxide is gradually precipitated of a beautiful red color, and when well washed (preferably with a little alcohol) will keep without alteration. J. Prakt. Ch. xc. 163. Ch. N. 231.

Butter as a Test for Copper. E. Lancelot has noticed a green coloration on butter produced by copper, though in so dilute a solution as not to be recognised by the ordinary reagents, and proposes butter as a reagent for this metal. Bull. de Thèr. 1862. A. J. Ph. xxxvi. 370.

LEAD.

Tin containing lead is stated by C. Reichelt to be rapidly acted on by a solution of common salt. Even moist salt appears to be quickly contaminated by lead, when in contact with such alloys. The lead appears to be dissolved out as the chloride. N. Jahrb. Ph. xxi. 150.

Chrome Yellow. For an improved process of making this pigment for use in the arts, see an article by J. Franzoy. Polytech. J. 1863, p. 156. Ch. News. Am. J. Ph. xxxv. p. 547. A. D. Circ. vii. 185.

Chrome Red. An improved process for making this pigment is given by J. Franzoy. Polytech. J. 1863. Ch. News. Am. J. Ph. xxxv. p. 547. A. D. Circ. vii. 185.

Oxychloride of Lead is now made on a large scale at Newcastle, England, as a substitute for white lead, from chloride of lead and lime water. Ph. J. and Trans. v. 161.

Oxide of Lead has been found by Förster to be hygroscopic, having absorbed, when exposed for nine days to a moist atmosphere, 7½ per cent. water, and 1½ carbonic acid. J. f. Prak. Ch. N. Jahrb. Ph. xx. 149.

TITANIUM.

The frequent presence of this metal in pig iron, and the characters of the iron and steel manufactured therefrom, are discussed by E. Riley in a paper read before the British Association. Ch. N. 205. A. J. Sci. and Arts, xxxvii. 126.

CHROMIUM.

Chromic Acid, in its relations to the oxides of iron, arsenic and antimony, is treated of by F. Kessler in Pogg. Ann. cxviii. 17. Zeits. An. Ch. ii. 383.

Hydrate of Chromic Oxide. Siewert has examined again this compound, and finds it to be a pure hydrate of the composition, when washed and dried, of $Cr_2 O_3 + 7HO$. Heated to 200° to 220° C., out of contact of air, it becomes $Cr_2 O_3 + HO$; but when heated in the air, this is contaminated with peroxide of chromium and other compounds,—a black colored product. For other details see Zeitschr. f. d. gesammt. Naturwissenschaften. Vierteljh. Ph. xii. p. 553. A. J. Ph. xxxvi. 110.

Salts of Sesquioxide. The change of color in these bodies, attributed by Berzelius to different allotropic states of the oxide, is ascribed by Siewert to varying degrees of basicity. Ann. Ch. Ph. cxxvi. 86. Ch. N. 202.

Chromate of Potassa and Ammonia. M. E. Kopp has obtained this salt by dissolving bichromate potassa in a solution of ammonia in closed vessels by heat. On cooling, its crystals are deposited, which should be dried over quicklime in an ammoniacal atmosphere. From the readiness with which it is decomposed by heat, it is suggested that it may prove valuable in the arts as an oxidizing agent in the development of certain colors, as that of logwood, &c., and in photography. Ch. N. 236—7.

VANADIUM.

Test for Vanadiates. Solutions of alkaline vanadiates acidulated with the mineral acids assume, according to Werther, a red coloration when brought into contact with oxygenated water, or ozonized oil of turpentine. This reaction is so delicate that it is said 1 part of vanadic acid in 85,000 of the mixture may be thus detected. This agent, it is suggested, may be used in searching for the presence of this metal in rocks and soils, in which, St. Clair Deville states, it is much more generally diffused than is commonly supposed. J. f. Prakt. Ch. lxxxiii. 195. J. de Ph. xlv. 551.

The presence of this metal in pig iron has been investigated by E. Riley. J. Ch. Soc. Ch. N. 211.

TUNGSTEN.

Persoz concludes, from his extended experiments, that this element belongs to the phosphorus group of radicals. Its equivalent he considers is 153·2 (O = 8). A. J. Sci. and Arts, xxxvii.

Caron's experiments show that the addition of tungsten to cast iron and steel, even in the small amount of one per cent., has a marked influence in increasing their hardness and tenacity. Ann. de Chimie, lxviii. 143. A. J. Sci. and Arts, xxxvii. 119.

MOLYBDENUM.

Delicate Method of Registering the Actinic Power of Light.

Dr. T. L. Phipson has found, in a solution of molybdate of ammonia in sulphuric acid, a ready means of measuring the actinic power of the sun's rays. This solution exposed to solar light, becomes of a bluish-green color, owing to the reduction of molybdic acid to molybdic oxide, while in darkness this compound returns to its original condition and color. The amount of molybdic acid thus formed is readily determined by a standard solution of permanganate or bichromate of potassa. Proc. Br. Asso. 1863. Ch. N. 198.

Phospho-molybdic Acid is prepared by Drs. Huseman and Marmé by dissolving thirty equivalents of molybdic acid in an equivalent quantity of caustic soda, and adding an aqueous solution of one equivalent phosphate of soda, and washing the pale-colored precipitate with water acidulated with sulphuric acid. Ann. Ch. Ph. 1863, 383. A. J. Ph. xxxvi. 226.

ARSENICUM.

Hydride. Dr. Wiederhold prepares this compound As_2H, by the action of hydrochloric acid on an alloy of 1 part arsenicum and 5 parts zinc. Thus obtained, it is a bulky light-yellowish-brown powder. Pogg. Ann. cxvii. 625. Ch. N. 205. A. J. Ph. xxxvi. 112. A. J. Sci. and Arts, xxxvii. 117.

A case of poisoning by arseniuretted hydrogen is reported in Gaz. Med. 1863, No. 43. A. D. Circ. vii. 44.

Purification of Arsenical Sulphuric Acid. Bussy and Buignet, in examining commercial sulphuric acid for arsenical compounds, find in it both arsenic and arsenious acid. In the former case, from the non-volatile character of arsenic acid, even in boiling sulphuric acid, it may be thoroughly purified by simple distillation. When arsenious acid only is present, the addition of a small quantity of nitric acid is needed to convert it into the more stable compound arsenic acid, previous to distillation. The presence of arsenious acid is thus dependent upon the absence of nitrous compounds from sulphuric acid. J. de Ph. xliv. 177. Ch. N. 218. J. de Ph. xlv. 465.

F. M. Lyte confirms the above statements, but prefers purifying sulphuric acid by heating it with $\frac{1}{4}$ to $\frac{1}{2}$ per cent. of oxalic acid until the reaction subsides, and adding to the cooled liquid a little powdered bichromate potassa, until a yellowish-green color, indicating the presence of undecomposed chromic acid, is observed. The sulphuric acid now obtained by distillation is entirely free from arsenic. Permanganate potassa would also peroxidize the arsenious acid, and render it non-volatile. Ch. N. 221.

Blondot prefers the addition of a small quantity of peroxide of manganese to convert the arsenious into arsenic acid. Arsenical sulphuric acid thus treated, and constantly stirred until boiling, showed no trace of arsenic in the distillate. Comptes R. Ch. N. 231.

Non-existence of Pyro- and Meta-arseniates. Maumené states that the salts of arsenic acid do not, as commonly stated, undergo a change upon exposure to heat like the phosphates, by which they are converted into pyro- and meta-arseniates. The usual brick-red precipitate of AsO_5 $3AgO$, was formed with soluble arseniates by nitrate of silver after they had been long exposed to high temperatures. Comptes R. lviii. 250. Ch. N. 220.

Ammonia has been noticed to be produced by the decomposition of water in presence of nitric acid and arsenic or antimony by Personne, with formation of arsenious and a little arsenic acid and liberation of nitrous acid vapor. This reaction has previously been observed in reference to phosphorus. Bull. Soc. Chim. vi. 163. Ch. N. 233. A. J. Ph. xxxvi. 328.

ANTIMONY.

Mirror of Antimony. Fresenius states that when a solution of an antimonial salt, acidulated with hydrochloric acid, is placed in a platina vessel with a strip of zinc, a deposit of antimony of a brownish or blackish color falls upon the zinc, irrespective of the presence of arsenic or zinc in the solution. Very small amounts of antimony may thus be detected. Zeits. An. Ch. i. 444. Vierteljh. Ph. xiii. 215.

BISMUTH.

Recovery from Type-Metal. On account of its present high price, Balard proposes to obtain it again from old printing type, and gives a process for separating it from tin and lead. J. de Ph. xlv. 160. Ch. N. 229.

MERCURY.

The biatomic character of this element has been somewhat confirmed by the experiments of Drs. Frankland and Duppa, on the mercury compounds of organic radicals. These chemists have succeeded in preparing the iodide of mercuric ethyl, in which one equivalent of iodine in the biniodide of mercury is replaced by one equivalent of ethyl, thus showing the ability of this element to combine with two equivalents of another element. J. Chem. Soc. 1863, 415. Ch. N. 208.

The production of Mercury in California is now stated to have reached 4,000,000 of pounds per annum. A. D. Circ. viii. 56.

Sulphide of Mercury has been noticed, by Dr. A. Claus, to be soluble, to some extent, (contrary to the usual statements), in sulphide of ammonium. Ann. Ch. Ph. 1863, 209. Ch. N. 225.

SILVER.

Chloride of Silver may be perfectly reduced to metallic silver, Millon and Commaille state, by means of ammonio-subchloride of copper. This reaction takes place with such accuracy that it may be applied to the estimation of silver, and to the analysis of a mixture of sub- and proto-salt of copper. The finely divided silver may be employed in the arts as a coating to wood, stone, &c. Lond. J. Photog. x. 246. Ph. J. and Trans. 1863. Am. J. Ph. xxxv. p. 528. Zeits. An. Ch. ii. 212.

F. W. Hart recommends using resin in intimate mixture with the powdered chloride of silver, as the reducing agent, and describes the details of the operation. Phot. News. A. D. Circ. viii. 50.

Chloride, Iodide and Bromide. H. Vogel publishes a paper on their behaviour to light, and the theory of photography. Ch. N. 205.

Oxide of Silver. Böttger has remarked the facility with which this body (as previously known) yields its oxygen to combustible substances, and has performed experiments, in this direction, upon antimonial compounds, phosphorus, tannin, creasote, sulphur, &c. J. f. Prakt. Ch. xc. 32. J. de Ph. xlv. 108. Ch. N. 231. A. J. Ph. xxxvi. 342.

Oxide of Silver in crystals has been observed by H. Vogel in a dark violet-colored film, upon an ammoniacal solution, produced by redissolving the precipitate from the nitrate by caustic potassa in a solution of ammonia. Carbonate of silver, in yellow crystals, has also been observed to form in such a liquid. Pogg. Ann. 118. 145. N. Jahrb. Ph. xx. 312.

PLATINA METALS.

Dr. Wolcott Gibb's continued researches on these bodies are published in A. J. Sci. and Arts, xxxvii. 57.

A. Guyard communicates a method for the treatment of residues containing platina. Compts. R. lvi. 1177. Dingl. Polyt. J. clxix. 278.

M. C. Lea contributes the results of his experiments upon these bodies. A. J. Sci. and Arts, xxxviii. 81.

ORGANIC CHEMISTRY.

CARBOHYDRIDES.

Deodorizing Petroleum and Mineral Oils. A patent has been issued in England for the use of nitrous acid for this purpose. A. D. Circ. vii. 154.

Petroleum products. Schorlemmer, by acidifying petroleum with nitric acid, finds it to separate into two portions, one of which is acid, and contains nitro-benzole, toluole, binitro-toluole, and a small amount of fatty acids; while the other, upon washing and fractional distillation, yields successively $C_5 H_{12}$ at 34° C., $C_6 H_{14}$ at 68° C., $C_7 H_{16}$ at 98°C., and $C_8 H_{18}$ at 119° C. Ann. Ch. Ph. cxxvii. 311. N. Jahrb. Ph. xx. 320.

J. P. Lesley gives a brief statement of the past history and present condition of the petroleum trade, including statistics of the use of coal oil in the arts, mode of manufacture, &c. Rep. Commissioner Agriculture, Washington, 1863, 429.

Distillation of Coal. B. H. Paul gives an interesting review of the history of the destructive distillation of coal, as applied to the industrial arts. Read before the Society of Arts. Ch. N. 191.

Nitrobenzole. Dr. H. Letheby gives a detailed account of the peculiar poisonous properties of nitrobenzole and aniline upon the animal system, and the means of detecting them in medico-legal investigations. Though powerfully narcotic, nitrobenzole, under certain circumstances, may remain a long time in the system without its effects becoming apparent. Ph. J. and Trans. v. 130. A. D. Circ. vii. 168.

Pitch. Kuhlman has made use of the deoxidizing properties of boiling pitch to reduce the peroxide of iron in certain minerals to the protoxide, and thus varying the color of certain marbles. Ch. N. 192.

The preservative power on wood, of coal tar products, is stated by Rottier to be due to the green oil, obtained by distilling the heavy oil of coal tar at a temperature of 572° Fahr. Ch. N. 202.

Paraffin is soluble, according to A. Vogel, in its own weight of bisulphide of carbon at 23° C. Its solubility in benzole and chloroform, at different temperatures, is also given. Ch. N. 205.

Paraffin in solution in coal tar, naphtha, petroleum, or bisulphuret of carbon, has been used by Dr. Stenhouse as an application to cloth or other textile fabrics to render them water-proof, and to metallic surfaces, gilt or tinselled articles, &c., as a protective varnish. It may also be found suitable as an application to leather, cordage, &c., for the same purpose. Ch. N. 1863. A. D. Circ. viii. 11.

An interesting description of the extensive paraffine works, at Bathgate, England, is given by W. B. Tegetmeier. Chem. and Drug. A. D. Circ. viii. 42.

Benzine. Kopp describes a method for the preparation of benzine from the heavy tar oils on a large scale, and its subsequent purification. By taking advantage of its property of solidifying at 15° C., it has been obtained, by the use of Carre's refrigerator, in an almost chemically pure state. Moniteur Sci. vi. 329. Ch. N. 232. A. J. Ph. xxxvi. 368.

The light carbohydrides are used by some of the French makers of sulphate of quinia in the place of alcohol. Dr. A. Geyger, in N. Jahrb. Ph., xx. 210.

ORGANIC ACIDS.

Kinic Acid. Lauteman has observed the conversion of this acid into benzoic acid and hippuric acid. By treatment of kinic acid with a saturated aqueous solution of hydriodic acid, benzoic acid may be produced, or by acting upon kinic acid with a compound of two parts iodine and one part phosphorus. The change made may be thus expressed. Kinic acid $C_{14}H_{12}O_{12}$ ($C_{14}H_8\ O_8 + 4HO$,) becoming benzoic acid $C_{14}H_6\ O_4$ ($C_{14}H_5\ O_3 + HO$.) Ann. Chem. et Pharm. Vierteljh. Ph. xii. p. 551. The occurrence of this body in coffee seeds is noticed under Rubiaceæ.

Camphoric Acid and Camphorates. Kempers's observations are published. Arch. Ph. cx. 106. J. de Ph. xlv. 364.

Picric Acid. Balard gives a short history of the discovery and former preparation of this article, and a description of an improved process for manufacturing it on a large scale, as a dye stuff, from the phenic acid obtained from coal tar. Moniteur Sci. 63, 153. Ch. N. 198.

Fritzsche shows that picric acid can combine with certain hydrocarbons to form definite crystalline compounds—which may serve as tests for these bodies. It also forms a definite compound with phenylic acid by which means it may be separated from other substances. Ch. Centrallbl. 1862, 845. Zeits. An. Ch. ii, 215.

Salts of Lauric Acid. Oudemans describes the preparation of the alkaline and earthy laurates from lauric acid, and their general properties. J. für Prakt. Ch. lxxxix. 206. J. de Ph. xliv. 271.

Pyrogallic and Gallic Acids are shown by F. Crace Calvert to rapidly produce carbonic oxide by the action of pure oxygen or by that of the atmosphere. Ch. N. 209.

Erucic Acid. Otto confirms the identity of this body with the brassinic acid of Websky according to Staedler's views, and reports his examination of it. Ann. Ch. u. Ph. cxxvii. 182. J. de Ph. xlv. 103. N. Jahrb. Ph. xx. 320.

Leucic Acid has been formed synthetically by Dr. Frankland by acting upon oxalic ether by iodide of ethyl and amalgamated zinc. J. Chem. Soc. Ch. N. 224.

Benzoic Acid has been formed synthetically by Harnitsky by passing oxychloride of carbon and the vapor of benzine into a retort heated and exposed to sunlight. The product separated from the unaltered benzine was found to contain benzoic acid and chloride of benzoyle. Comptes R. Ch. N. 231.

Uric Acid and Derivatives. Baeyer's researches on these bodies are published in Ann. Ch. Ph. cxxvii. 199. N. Jahrb. Ph. xx. 316.

Chelidonic Acid. Wilde's experiments are given in Ann. Ch. Ph. cxxvii. 146. N. Jahrb. Ph. xx. 319.

Solubility of Metallic Oxides in Alkaline Citrates. Citrate of ammonia is well known to possess the power of dissolving hydrated oxide of iron. H. N. Draper finds it to have the same effect upon hydrated oxide of copper, lead and bismuth. Citrate of soda and of potassa have the same property, but in less degree. Dub. Med. Press. Ph. J. & Trans. v. 374. J. Spiller has previously decided the same behaviour towards other metallic oxides, and certain non-metallic salts. J. Chem. Soc. 1857.

Oxalic Acid. Maumené shows that the usual method for purifying this acid leads to incorrect results. The last crystals that form in its solution should be chosen and not the first, since the former are the freest from alkaline contamination. J. de Ph. xlv. 153. Ch. N. 218.

Prof. How confirms the above statement, and recommends the addition of nitric acid to the mother liquors as a means of obtaining crystals of still greater purity. Ch. N. 225.

ALCOHOLS AND DERIVATIVES.

Alcohol. Cotelle, a French manufacturing chemist, has patented a process for the production of alcohol, as suggested long ago by Berthelot, from olefiant gas. This gas $C_4 H_4$, existing to the amount of 4 to 12 per cent., in illuminating gas, if brought into contact with a larger quantity of strong sulphuric acid, becomes thus sulpho-vinic acid, which is readily decomposed by distillation into alcohol which passes over, and weak sulphuric acid. The original gas freed from the $C_4 H_4$ can be used as fuel. This method is said to be a cheaper one, and to be carried on largely at St. Quentin. Am. J. Sci. xxxvi. p. 403.

Millon states the contact of yeast with sugar, under certain circumstances, will not liberate carbonic acid. In this case a compound of carbonic acid with sugar is formed, analogous to those of sulphuric, tartaric and citric acids with glucose. Comptes R. Ch. N. 192.

Water in Compound Ethers and in Alcohol, even when in very small quantity, may be detected, according to Berthelot, by heating the mixture to 150° for 20 to 30 hours. The water decomposes the ether into acid and alcohol, which may be readily recognized, and the acid may be estimated by a standard solution of baryta. A small amount of water in alcohol may be recognized in like manner, by adding a perfectly anhydrous compound ether, and treating as above. If the alcohol is free from water, the mixture should not become acid. Ph. J. and Trans. v. 121.

Nitroglycerin. J. Merrick, jr., has found the $\frac{1}{40}$ of a drop to accelerate the pulse and produce headache. As nitroglycerin is volatile, its effects may be produced by inhalation. A. J. Sci. and Arts, xxxvi. 212. J. de Ph. xliv. 458.

The addition of nitroglycerin to gunpowder in as large an amount as the latter can absorb, has been found to very greatly increase its explosive power. Such a mixture is suggested as a blasting powder. Nobel in Polyt. J. clxxi. 443. J. de Ph. xlv. 458.

Propylene appears to have been formed synthetically by Alexcyeff and Beilstein by acting upon bromide of ethylene by ethylate of soda. Comptes R. lviii. 178. Ch. N. 218.

Zinc Ethyl has been readily prepared by Alexcyeff and Beilstein by acting upon 70 to 80 parts of zinc turnings mixed with 7 or 8 of zinc and sodium alloy by 100 parts of iodide of ethyl. Comptes R. lviii. 178. Ch. N. 218.

Methylic Alcohol. The presence of wood-spirit is detected by E. J. Reynolds, by its producing, with a solution of chloride mercury in the presence of caustic potassa, a precipitate which becomes soluble upon heating the mixture, and which may be precipitated by acids. Ph. J. and Trans. v. 269. A. J. Ph. xxxvi. 152.

Commercial Wood-Spirit contains, according to W. Dancer, acetate of methyl, acetone and bimethyl-acetal. J. Ch. Soc. Ch. N. 234.

Aldehyd has been found by Berthelot to be completely decomposed into water and resin without the disengagement of gas, by heating it for four days. Small amounts of alcohol and acetic acid are formed at the same time. Compts. R. lvi. 803. N. Jahrb. Ph. xxi. 156.

Chloropicrin has been prepared by S. Priestly directly from methylic alcohol, by the successive action of chlorinated lime and nitric acid. The chloropicrin is separated from undecomposed wood-spirit, and from the chloroform produced in the process by distillation. Ch. N. 212. A. J. Ph. xxxvi. 133.

Ageing of Wines. Pasteur's experiments indicate that oxygen is the agent producing this change, but its action, to be beneficial, must be slow and properly managed. The effect of bottling wine is to prevent its æration, and thus prolong its keeping. Comptes R. Ch. 211.

Maclurin. The morin-tannic acid of Wagner is stated by Hlasiwetz and Pfaundler to be decomposed by alkalies into phloroglucin and the protocatechic acid of Strecker, and is, therefore, a compound ether analogous to phloretin. Ann. Ch. Ph. cxxvii. 351. A. D. Circ. viii. 44.

VOLATILE OILS AND RESINS.

Oil of Chamomile. G. Bizio has subjected this oil to a chemical examination. He finds it to become solid at —20° C., and to boil at from 240° to 300°. At 300° it is decomposed. By diluted muriatic or nitric acids it is colored green; with concentrated sulphuric acid, reddish yellow; by chlorine, yellowish white and tough. It is thickened by iodine, and colored reddish brown, and produces with bromine a brown elastic mass. It is but little changed by caustic alkali. Distilled with anhydrous phosphoric acid, it yields a colorless carbo-hydrogen $C_{20}H_{16}$, smelling like naphtha. The oil contains the elements of water, apparently in the proportion, $5(C_{20}H_{16}) + 6HO$. Bericht. der Wiener Acad. Vierteljh. Ph. xii. p. 550. A. D. Circ. vii. 154. A. J. Ph. xxxvi. 109.

Oil of Gaultheria. Lauteman states that when hydriodic acid is passed through this oil, sylicylic acid separates, with formation of iodide of methyl. Ann. Ch. Ph. cxxvi. 14. N. Jahrb. Ph. xx. 27.

Volatile Oil of Nutmegs. Cloez has prepared this hydrocarbon by exhausting the bruised nutmegs with bisulphuret of carbon or ether, evaporating off the menstruum, and exposing the butter-like residue to a heat of 160° to 175° C. A volatile liquid is thus produced isomeric with oil of turpentine, from which it may be distinguished by not forming with nitric acid and alcohol a solid hydrate upon standing. Its formula appears to be $C_{20}H_{16}$. J. de Ph. xlv. 150.

Expressed Oil of Nutmegs. Riekher recommends the preparation of this article by the apothecary as affording a product which is purer, better and more active than the commercial article, and for the sake of economy. N. Jahrb. f. Ph. xix. 19. A. J. Ph. xxxvi. 111.

Oil of Mustard. Will and Kerner confirm previous statements in regard to the production of this body from myronate of potassa. The latter, obtained in crystals, consists of $C_{20}H_{18}NKS_4O_{20}$, and may be regarded as made up of 1 eq. oil of mustard, C_8HNS_2, 1 eq. sugar $C_{12}H_{12}O_{12}$ and 1 eq. bisulphite potassa

$HKS_2 O_3$, which, by treatment with nitrate of silver, may be separated. Ann. Ch. Ph. cxxxv. 267. N. Jahrb. Ph. xx. 153.

Coloring matter of certain Volatile Oils. S. Piesse isolates from oil of chamomile, wormwood, patchouly, bergamot, lemon-grass and others, a blue coloring matter, which appears to be a definite compound, having a fixed boiling point, sp. gr. ·910, and the formula $C_{16}H_{13}O$, or $C_{16}H_{12}HO$. This so-called azulene is frequently disguised by a yellow resin, supposed to be a product of its oxidation. Ph. J. and Trans. v. 277.

This substance appears to have been previously discovered by J. H. Gladstone, and named cœrulein; and to have been also observed by Dr. Gilbert and D. Brewster. Ch. N. 210 and 209. A. J. Ph. xxxvi. 87.

Optical properties of Volatile Oils have been made the subject of an extensive investigation by Chautard. J. de Ph. xliv. 13.

Oil of Levant Wormseed. Kraut and Wahlforss confirm the formula, $C_{20}H_{16}O_2$ for this body, and explain the previously observed deposition of carbon upon rectifying the oil, by the fact that in the process a new hydrocarbon $C_{20}H_{18}$ is formed, which, having nearly the same boiling point as the original liquid, is not separated by fractional distillation. Ann. Ch. Ph. cxxviii. 293. J. de Ph. xlv. 187.

Action of Nitric Acid on Camphor. Schwanert has observed that camphor, upon long boiling with nitric acid, gives rise to a large amount of camphresic acid—a body resembling, in its purified state, Venetian turpentine. It is inodorous, of an acid bitter taste, and has the composition $C_{20}H_{14}O_{14}$. It can also be prepared from certain other volatile oils and resins, by the action of nitric acid. Ann. Ch. Ph. N. Jahrb. Ph. xx. 34.

Amber. Baudrimont has found in 100 parts, ·48 of sulphur. Comptes R. J. de Ph. xlv. 403.

ORGANIC ALKALOIDS.

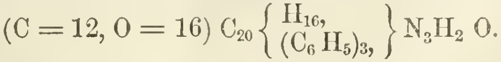
Urea. To convert this body into carbonate of ammonia, a proper temperature, the presence of water, and a special vegetable ferment, according to Van Tieghem, are necessary. This change he calls the ammoniacal fermentation. Under the influence of apparently the same ferment hippuric acid is converted into benzoic acid and glycollamine. Comptes R. Ch. N. 218.

This alkaloid has been separated from sewer water by Peligot, by evaporating it to dryness, exhausting with absolute alcohol, again evaporating and dialysing the residue. The diffusate evaporated, and acidulated with nitric acid, yielded crystals of nitrate of urea. Comptes R. Ch. N. 231.

Anilina. H. Vohl gives a method for the manufacture of this substance on a large scale, by acting upon nitrobenzole with caustic potassa and glucose at moderate temperatures. Dingl. Polyt. J. clxvii. p. 457. Chem. News, 192. Am. J. Ph. xxxv. p. 546. Aniline is prepared by A. Kremer by heating together 1 eq. nitrobenzole, 6 eq. zinc in fine powder, and 2 eq. water, in a suitable distillatory apparatus. N. Jahrb. Ph., xxi. 44.

Aniline Dyes. Hofmann states that neither chemically pure anilin nor pure toluidin yield, separately, coloring matters with oxidizing agents. A mixture of the two is necessary to produce the characteristic colors. Compts. R. lvii. 25. Am. J. Sci. xxxvi. p. 413. Further researches on these derivatives are published in Compts. R. lvii. 25. Ch. N. 190. W. H. Perkins on aniline purple. Proc. Royal Soc. xii. 713. A. J. Ph. xxxvi. 171, by H. Schiff on aniline yellow. Ann. Ch. Ph. cxxv. 360. J. de Ph. xlv. 110. Ch. N, 235. A. D. Circ. viii. 123. Aniline Black. Mon. Sci. vi. 433. Ch. N. 237. On Aniline Brown by G. De Laire. N. Jarhb. Ph. xxi. 173. On Aniline Red by G. Delvaux. Rep. de Ph. xx. 21. On Aniline Green Ch. N. 231.

Aniline Blue. This substance, lately prepared in a state of purity, has been found by Hofmann to be a triphenylated rosaniline, being produced from rosaniline by the substitution of 3 atoms of phenyl for 3 atoms of hydrogen, and may be expressed by the formula:



$$(C = 12, O = 16)\ C_{20}\left\{\begin{matrix} H_{16}, \\ (C_6H_5)_3, \end{matrix}\right\} N_3H_2\ O.$$

Ph. J. and Trans. v. 72.

Constitution of Aniline. H. Schiff considers aniline as an ammonia in which one atom of hydrogen is replaced by phenyl

$$= N \left\{ \begin{array}{l} C_{12}\,H_5. \\ H \\ H \end{array} \right\}$$

and in which a second atom of hydrogen may be replaced by a metal. Ph. J. and Trans. v. 72. Further researches on these bodies, by H. Schiff, are published in Comptes R. lvi. 1234. Ch. N. 194.

Starch has a remarkable absorbent power for the coal oil colors, being able, according to W. J. Young, to deprive solutions of aniline, mauve, magenta, &c., of their deep color, by simple agitation. This color is afterwards yielded by the starch to alcohol. Ch. N. 216. A. J. Ph. xxxvi. 126.

Toluidine. Dr. H. Müller has further examined this body, and describes its characters and a method for preparing it on a large scale. Zeitsch. Ch. Ph. 64, 11. Ch. N. 227. Sell's method of preparing this body from the residues of an aniline manufactory, and experiments upon its compounds, are published in Ann. Ch. Ph., cxxvi. 153.

Acetanilide has been prepared by C. G. Williams by simply boiling together aniline and acetic acid with water; after some time this body begins to appear as a sublimate of white crystals. It appears to be sometimes formed as a secondary product during the manufacture of aniline on a large scale. J. Chem. Soc. Ch. N. 221.

Quinoline. H. Schiff's observations, on the salts of the metallic compounds of this body, show a strong similarity between them and the aniline-metallic combinations. Comptes R. lvii. 837. Ch. N. 216.

Meconin has been observed by Matthiesson & Foster, to be formed with hemipinic acid by the action of potassa upon opianic acid. See a paper by these chemists on the chemical constitution of narcotine, &c. Proc. Phil. Trans. 1863. J. Chem. Soc. 1863, 342.

Quinia. Jos. Hanaman describes two new hydrates of quinia, which appear to be constituted thus:

$$C_{20}\,H_{12}\,NO_2 + 3HO + 5HO.$$
$$C_{20}\,H_{12}\,NO_2 + 3HO + 2HO.$$

By a heat of 120° C. they are both reduced to the ordinary terhydrated alkaloid $C_{20}\,H_{12}\,NO_2 + 3HO$. Wittst. Vierteljh. xii. p. 526.

Compound of Quinia and Oil of Anise. Hesse has obtained a crystalline compound of these two bodies, which has no odor of anise at common temperatures, and appears to have the formula $2(C_{40}\,H_{24}\,N_2\,O_4) + C_{20}\,H_{12}\,O_2 + HO$. J. de Ph. xliv. 267. A. J. Ph. xxxv. 20.

Oxycinchonia. An alkaloid, isomeric with quinia, has been artificially prepared, by Strecker, from cinchonia, by acting upon the monobrominated cinchonia of Laurent. It differs sensibly from quinia in the crystallization of its salts, and by the absence of its peculiar fluorescence. Its composition is $C_{40}\,H_{24}\,N_2\,O_4$. Ann. Ch. u. Ph. cxxiii. 379. J. de Ph. xliv. 265. Ch. N. 218. Am. J. Ph. xxxvi. 359.

Quinia may be distinguished from Cinchonia, according to Palm, by their behaviour towards a test liquid, prepared by boiling a solution of potassa with excess of sublimed sulphur. Quinia forms with it a red resinous mass, and cinchonia separates from it as a white powder containing sulphur. Ph. Zeitsch. f. Russland, 1863, 340. J. de Ph. xlv. 459.

Veratria. Trapp has observed that the smallest traces of veratria, dissolved in cold concentrated hydrochloric acid, gives a colorless solution, which becomes of a very intense red color on continued boiling. Polyt. Notizblatt, 1863, p. 96. Am. J. Sci. and Arts, vol. xxxvi. (2) p. 268. Am. J. Ph. xxxv. p. 556.

Caffeidin. A new base, derived from caffein by the action of a hot solution of baryta, has been isolated and described by Strecker. It is an oily liquid and has the formula $C_{14}\,H_{12}\,N_4\,O_2$. Ann. Ch. Ph. cxxiii. 360. J. de Ph. xliv. 266. A. J. Ph. xxxv. 20.

Berberina. Prof. Procter describes the preparation of this alkaloid of Hydrastis canadensis, from its sulphate by oxide of lead, and some of its solubilities. A. J. Ph. xxxvi. 10. A. D. Circ. viii. 23. Ch. N. 222.

Morphia. Horsley states that when a solution of the acetate or sulphate of morphia, containing 1 per cent. of the salt is poured into one of nitrate of silver, containing 1·77 per cent., a precipitation of metallic silver takes place. Ch. Centralbl. 1862, 656. J. de Ph. xliv. 456.

Atropia. Dr. E. Pfeiffer observes that when this alkaloid is distilled with bichromate potassa and sulphuric acid, benzoic acid and ammonia are produced. By the action of caustic soda lye it is resolved into a new acid and a new base, whose characters are briefly described. Ann. Ch. Ph. cxxviii. 273.

Dr. K. Kraut finds that treating atropia with a hot saturated solution of baryta in a sealed tube for two or three hours decomposes it into a different body, which appears to be a compound of a new acid and base; the former of which is called atropic acid, and the base tropia. From their mode of preparation and properties it is probable that they are identical with those obtained by Pfeiffer, as above, with caustic soda. Ann. Ch. Ph. cxxviii. 280. See remarks by Prof. Mayer on these papers. A. J. Ph. xxxvi. 234.

Test for Atropia. Gulielmo finds that atropia dissolved in a few drops of concentrated sulphuric acid and heated, acquires a brown color, and emits an intense odor, resembling that of the flowers of the orange and Prunus spinosa. The latter is particularly evident if a few drops of water be added when the color appears. One-thirtieth to one-fortieth part of a grain may thus be recognized. Schweiz. Wochensch. A. J. Ph. xxxvi. 112. Zeits. An. Ch. ii. 404.

Physostigmin. Jobst and Hesse have isolated this alkaloid from the Calabar bean as an amorphous brownish-yellow mass, and described its behaviour towards reagents. Ann. Ch. Ph. A. J. Ph. xxxvi. 334.

Tyrosina. Wittstein's experiments lead to the conclusion that this body is one of the constituents of American extract of rhatany root, although it has not been discovered in the root itself.

The rhatania obtained by Ruge from the same extract appears to be a different though homologous substance. Vierteljh. Ph. xiii. 265.

Piperina has been studied by T. Wertheim; its composition is stated to be $C_5 H_{10}N_2 O$ ($O = 16$). Sitzbericht. d. Wien. Ak. Ann. Ch. Ph. cxxvii. 75.

Narceina. Hesse confirms the formula $C_{46}H_{29}NO_{18}$, and describes its properties. Ann. Ch. Ph. cxxix. 260. J. de Ph. xlv. 367.

Delphinia. J. Erdman details the process for preparing this alkaloid and its properties, and gives the formula $C_{24}H_{35}NO_2$. Arch. Pharm. clxii. 44. N. Jahrb. Ph. xxi. 153.

CARBOHYDRATES AND ALLIED COMPOUNDS.

Non-polarizing Sugar. Jodin has announced the discovery of a sugar which has no rotatory power upon polarized light. It is uncrystallizable, and does not reduce Fehling's solution. Comptes R. Ch. N. 196.

Glucose. The reducing power of grape sugar has been noticed by Dr. Kemper upon iodide of starch. The action, however, only takes place in a dilute solution of the latter substance, and upon prolonged contact. Archiv Ph. clxv. 252. A. D. Circ. vii. 171.

Action of Light upon Glucose. Scheibler states, the sugar produced by the action of an acid upon grape sugar, which, as Dubrunfaut has shown, is a mixture of right and left sugars, when set aside in the dark to crystallize, yields only the dextrogyric variety, the lævogyric remaining in solution. When, however, the solution is exposed to the sun's rays, its lævogyric sugar is converted into the other modification, which only is then to be obtained from the liquid. This change likewise takes place in honey, and may serve to explain the care which bees take to preserve the contents of the cells of the honey-comb from the action of light, which might otherwise slowly convert them into solids. Dingler's Polyt. J. clxix. 379. J. de Ph. xliv. 452. Ch. N. 230. A. J. Ph. xxxvi. 319.

Glucose in Trommer's Test Liquid is converted, according to Reichhardt, into a gummy substance and a hitherto undescribed acid,—$C_6 H_5 O_{10}$,—which he names gummic acid; and which closely resembles tartaric acid. The gum is very similar to dextrin or gum arabic, and appears to have the formula $C_{12}H_{13}O_{13}$, and yields oxalic acid with nitric acid. Ann. Ch. Ph. cxxvii. 297. J. de Ph. xliv. 453. Ch. N. 233.

Crystallized Glucose. Dr. Anthon's process for manufacturing crystallized sugar from starch, on a large scale, is described in Ph. Centralhalle, 1863. A. D. Circ. viii. 44.

GLUCOSIDES.

Cholestearin. Prof. Beneke has observed the solubility of this substance in glacial acetic acid,—resembling hematin in this respect,—as well as its solution in valerianic, butyric, capronic and caprylic acids. Ann. Ch. Ph.1863. A. D. Circ. vii. 139.

Aloin, according to Czumpelik, splits into rottlerin and sugar.

$$C_{34}H_{18}O_{14} + 4HO = C_{22}H_{10}O_6 + C_{12}H_{12}O_{12}.$$

Sitzungsber d. K. Akad. N. Jahrb. Ph. xx. 318.

Digitalin. M. L. Grandeau finds that the presence of very minute quantities of this substance may be detected by exposing the matter containing it, after being moistened with sulphuric acid, to the vapors of bromine. A violet color is immediately observed, which varies in depth according to the amount of digitalin present. Comptes R. lviii. 1048. Ch. N. 241.

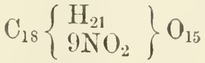
LIGNINE.

Gun-Cotton. Dr. F. Luchs gives a method of preparing this in a mixture of 40 parts sulphuric acid and 18 parts saltpetre. Ten minutes after mixing, 2 parts of cotton are exposed in this until soluble in a mixture of 2 parts of ether (sp. gr. ·730) and 1 part alcohol of 90 per cent. The cotton is washed, first with water and then with alcohol, and while still moist is dissolved in ether containing about one-tenth alcohol, in which it is completely soluble. Dingler's Polyt. Journ. clxvi. 62. Vierteljh. Ph. xii. p. 554.

Pyroxylin soluble in alcohol has been prepared by Sutton by acting upon cotton by a mixture of 100 grammes sulphuric acid, (sp. gr. 1·83) and 80 grammes nitric acid (sp. gr. 1·4), at a temperature of 170° F. The product is to be well washed and dried. Thus prepared, it is in the form of a coarse powder. J. de Ph. A. J. Ph. xxxvi. 21.

Gun-cotton and pyroxiline paper have been noticed by Prof. Johnston to produce remarkable positive electrical excitement in sulphur, sealing-wax and other ordinarily negative electrics. A. J. Sci. and Arts, xxxvii. 115. A. D. Circ. viii. 68. A. J. Ph. xxxvi. 268.

Constitution of Gun-Cotton. By the researches of Hadow, it appears that the action of nitric acid upon cotton results in the displacement of a certain number of atoms of hydrogen in the latter body, and their substitution by the same number of atoms of peroxide of nitrogen (NO_2). A treble atom of cellulose,—viz.: $3(C_6H_{10}O_5)$ appears to be affected by this change, and 9, 8, 7, or 6 atoms of hydrogen may be replaced according to the strength of the acid employed. The highest substitution product,—viz.: that in which 9 atoms are displaced is pyroxylin or gun-cotton, while those intermediate between the highest and lowest appear to be the soluble gun-cottons, which are used for collodion. The composition of tri- nitro-cellulose or pyroxylin may be represented as follows:

Cotton.	Gun-Cotton.
$3(C_6H_{10}O_5)$	 $C_{18}\left\{\begin{matrix}H_{21}\\9NO_2\end{matrix}\right\}O_{15}$

A. D. Circ. viii. 123.

STARCHES.

Starch in Unripe Fruits. Payen has pointed out the following plan for detecting starch in fruits. A thin section of the fruit, made parallel to its axis, is immediately placed in water to prevent discoloration and to remove soluble matters. When well washed, it is placed in a very weak alcoholic liquid containing iodine, for an hour or two, until the blue coloration appears. Compt. Rend. liii. 813. Vierteljh. Ph. bd. xii. p. 559.

Dextrin is stated by Kemper to act like glucose in reducing the cupreous liquid of Trommer when in a concentrated solution only. He finds also, that dextrin is not converted into sugar by a weak solution of potassa. Arch. der Pharm. clxv. 250. J. de Ph. xliv. 455.

COLORING MATTERS.

Valuation of Indigo. W. McKinlay proposes an improved method, founded upon the decoloration of a solution of indigo in sulphuric acid, by means of bichromate of potassa in the presence of oxalic acid, six grains of bichromate being sufficient to decolorize 10 grains pure indigo. Ch. N. 210.

Hæmatoxylin. The delicacy of its reactions with the alkalies and certain metallic salts are given in Zeits. Anal. Ch. ii. 9. A. D. Circ. viii. 24.

Morin, the coloring matter of fustic, has been examined by Hlasiwetz and Pfaundler, who describe its preparation and properties. Ann. Ch. Ph. cxxvii. 351. A. D. Circ. viii. 44.

Homologous Coloring Matters. Rochleder calls attention to the composition of purpurin $C_{18}H_6O_6$; chrysophanin $C_{20}H_8O_6$; and rottlerin $C_{22}H_{10}O_6$ as different members of the same series. Sitzungsber. d. K. Ak. 1863. N. Jahrb. Ph. xx. 318.

Schutzenberger and Schiffert state that the purpurine of M. E. Kopp contains 4 distinct bodies, and that there are in madder five different coloring matters, which, from their composition, may be arranged in a natural series. J. de Ph. xlv. 360.

Chlorophyll. Prof. Stokes infers the existence of two distinct coloring matters in chlorophyll from the distinct and differently colored bands observed under polarized light. J. Chem. Soc. Ch. N. 237.

PROTEIN COMPOUNDS.

Gluten in Bread. Barral attributes the change which takes place in the crust of bread in baking, in part to the alteration of its gluten. Payen had previously supposed that the greater solubility of the crust than of the dry crumb, was due to the conversion of the starch into dextrin. But Barral finds in the soluble portion of the crust 7 to 8 per cent. of nitrogen, while in the soluble part of the crumb but 2 or 3 per cent., showing that there is an alteration by the heat of its azotized constituents. The soluble part of the crust is more highly nitrogenized than the juice of meat. A. J. Med. Sci., 1863. A. J. Ph. xxxv. p. 557.

Albumen. Coagulated albumen has been found by Schutzenberger to be converted again into its soluble modification by treating the albuminates of potassa, obtained by dissolving it in a solution of potassa, with acetic acid within a dialyser. Comptes R. Ch. N. 216.

FERMENTS.

Putrefaction. Pasteur states, putrefaction is determined by the presence of certain infusorials. One class of which,—the bacteria,—cannot exist without oxygen; the other, the vibrios, cannot exist with it. Both classes may sometimes be present in the same liquid, as when its surface becomes densely covered by a pellicle. The bacteria resolve complex organic substances into water, ammonia and carbonic acid. Compt. R. Ch. N. 188.

Pasteur's continued researches have confirmed the conclusions previously announced in regard to the connection between infusorial germs and putrefaction. Putrescible liquids, after boiling, have been kept for three years in air deprived of vital germs by heat without undergoing any change. Comptes R. A. D. Circ. viii. 7.

Fermentation. Dr. J. Lemaire's experiments with carbolic acid indicate that this liquid prevents the fermentation of many organic substances,—viz.: juices of plants, meats, eggs, &c. Yeast, when kneaded with a saturated solution of it, (containing 5 per cent.,) became incapable of producing fermentation. Meat, blood, &c., already putrid, were quickly deodorized by this acid, and further change entirely prevented. Dr. Lemaire considers Liebig's chemical theory entirely incapable of explaining the phenomena of fermentation, and agrees with Pasteur in attributing it to the development of germs of organized beings. Moniteur Sci. iv. 649. Ch. N. 194. A. D. Circ. vii. 170. See ANIMAL POISONS. He, however, denies that a special ferment is necessary for every different kind of fermentation. Comptes R. Ch. N. 203.

According to Béchamp, creasote cannot check fermentation after it has been established, *i. e.*, does not prevent the development of mucedines or infusoria after they have begun to grow, but may prevent the commencement of the process by destroying the vitality of these germs. J. de Ph. xlv. 440.

Béchamp considers that two kinds of ferments exist,—one soluble like diastase, and therefore not organized; the other consisting of germs. In the fermentation of cane-sugar by beer-yeast, the plant first transforms the sugar into glucose outside itself, by means of a product ready formed in its organism, which the author calls zymase; the plant then absorbs the glucose, and finally throws out as waste matters those products which are called the products of fermentation. Béchamp has produced alcohol by putting the mycoderma aceti in contact with cane-sugar. Comptes R. Ch. N. 228. A. J. Ph. xxxvi. 339.

Béchamp, observing that alcohol may be produced by beer-yeast in a liquid, without the presence of grape-sugar, as well as by a ferment analogous to beer-yeast in the presence of grape-sugar, concludes that alcohol may be considered simply as an excretion or product of this growth, without reference to the nature of the food that supports it. J. de Ph. xlvi. 36.

At the last meeting of the British Association, Dr. Robinson read a suggestive paper on the probable relation existing between putrefaction, fermentation and epidemic diseases, and referred to the well known action of certain disinfectants in retarding these processes. A. J. Med. Sci. 1864, 545.

PHYSIOLOGICAL AND PATHOLOGICAL CHEMISTRY.

Saliva. Dr. Ebstein, in some experiments upon the action of saliva upon starch, confirms the facts heretofore observed, of its conversion into dextrine and sugar, even in the presence of some acid. Chem. News, 1863. Am. J. Ph. xxxv. p. 476.

Coagulation of Blood. Dr. J. Lemaire finds phenic acid to coagulate blood immediately on contact, without altering the shape of the globules, as is the case with the mineral acids. Moniteur Sci. iv. 649. Ch. N. 192. A. J. Ph. xxxv. 552.

Animal Poisons. The sting of a bee and venom of serpents and toads have been found, by Dr. Lemaire, to be promptly destroyed by phenic or carbolic acid. Vaccine matter, mixed with phenic acid, was rendered inoperative. This acid appears to have some effect in destroying the virus of glanders. Miasmatic poisons appear to be also checked by this substance. See Fermentation. Moniteur Sci. iv. 649. Ch. N. 194. A. D. Circ. vii. 170.

The poisonous effects of Baryta Salts and Oxalic Acid are sometimes due, according to Dr. Osmun, to the insoluble precipitates which are formed, when they are brought into contact with soluble sulphates, or salts of lime existing in the blood, thus obstructing the branches of the pulmonary arteries. Their presence in the lungs has been shown by analysis, but not in the brain, kidneys nor muscles. Virch. Archiv xxvii. A. D. Circ. viii. 6.

Gastric Liquids, &c. Dr. Ph. Lusanna has communicated some observations on the acid nature of the liquids of the stomach. Jour. de Med. de Bruxelles. Vierteljh. Ph. bd. xii. p. 563.

Brücke, of Vienna, finds that the pepsin secreted by the glands of the stomach, dissolved in hydrochloric acid, dissolves albuminous matter most readily, when the acid solution is of the strength of $\frac{1}{8}$th gramme of dry hydrochloric acid to a litre of water. Brücke's experiments go to show that part of the albuminous matter is not converted into pepsin as held by Mülder and others. Chem. News, 1863. Am. J. Ph. xxxv. p. 476.

Blood. Prof. A. Flint, Jr., examines critically the methods in use for the analysis of blood, and suggests improvements. A. J. Med. Sci. 1863, 330.

Electricity of the Blood. Dr. Scoutetten has succeeded in measuring the amount of electricity in the blood by means of a galvanometer. A. J. Arts and Sci. xxxviii. 110.

Coagulation of Fibrin. Schmidt's researches show that the principle causing coagulation is chiefly contained in cells, and is particularly abundant in blood-lymph, chyle, in pus-corpuscles, and to some extent in saliva, &c., and is believed to depend upon a substance identical with hæmato-globuline. The influence of the gases of the blood upon its coagulation is also discussed. Arch. f. An. Phys. 1861. A. J. Med. Sci. 1863, 525.

Acids of the Bile. Hoppe-Seyler has examined these different bodies, particularly in their relations to polarized light, and believes that the substances known as fellic, cholic, fellonic, cholanic and choloidic acids are only different impure states or modifications of cholalic acid, $C_{48}H_{40}O_{10}$. J. de Ph. xliv. 456.

Transfer of Oxygen in the Body. Liebig states the supply of oxygen in the bodies of the carnivora is largely due to the decomposition of water. The oxygen disappears in the form of carbonic acid, while hydrogen is exhaled. A. J. Med. Sci. 1863, 525.

The amyloid Substance in the Liver. Dr. McDonnell concludes that this secretion, described by Bernard as glucogenic matter from its supposed ultimate conversion into sugar, is not normally a sugar-yielding substance, but is assimilated matter in the course of transformation to a nitrogenous and more highly organized condition; and that its conversion into sugar must be regarded as a deviation from its progressive course. Dub. Med. Press, 1863. A. J. Med. Sci. 1863, 524.

The coloration of the Skin in Yellow Fever is attributed, by Dr. S. F. Speir from his observations, to the conversion of the hæmatine of the blood into hæmatoidine. The color noticed around ecchymotic spots, and in some other cases, is believed to be due to the same cause. Am. Med. Times, 1863. A. J. Med. Sci. 1863, 286.

Crystals of Phosphate of Lime and Magnesia have been discovered in the intestines of a person after death, arising from the decomposition of fragments of bone lodged there. Brit. Med. and Surg. Journal, 1864. A. J. Med. Sci. 1864, 279.

Excretion of Nitrogen. Voit has performed a new series of xperiments to establish the fact attested by previous researches, that all of the nitrogen contained in the food of a mature animal is excreted by the kidneys and intestines, in opposition to the views of Boussingault and others, who believed it to pass off in part in the exhalations, as ammonia, &c. Ann. Chem. u. Ph. ii. p. 238. Am. J. Sci. vol. xxxvi. p. 271.

Seegen, supposing that the medicinal effect of many mineral waters might be due to their sulphate of soda, has experimented upon the action of this salt upon dogs, when given in small doses for a long period. From these experiments it appears that under its influence the animal increases in flesh, and the decomposition of the nitrogenous tissues and the excretion of nitrogen are retarded. N. Jahrb. Ph. xxi. 163.

Urine. Dr. W. Robert recites briefly the means of readily distinguishing several of its normal and abnormal constituents. Wien. Med. Wochenschr. N. Jahr. Ph. xx. 29.

Indican in Urine. The occurrence of indican in urine, previously noticed by Schunk, is confirmed by Prof. Hoppe-Seyler, who finds it a constant ingredient of this excretion. It is found to be particularly abundant in the urine of dogs, and is perceptible even after they have been fed on animal food only. It is observed also in that of the cow, horse, the elephant, and the swine. Bizio has ascertained that it is identical with the indigo of plants, and that it is to be found also in the sweat. Arch. f. Path. Anat u. Phys. 1863, 288. N. Jahrb. Ph. xxi. 154.

Dr. Thudichum denies the presence of indicum in this fluid, and considers the coloring matter to be a peculiar substance, incapable, like indican, of splitting into indigo-blue, indigo-red and sugar, and which he calls urochrome. Dr. T. reviews the investigations which have been made upon this subject. See also remarks by R. Porret and Dr. Harley. J. Chem. Soc. Ch. N. 218.

Putrefaction of Urine. May be best prevented, according to A. Müller, by the addition of sulphate of copper, or zinc, or crude creasote. It is necessary that the recipient vessels should be well cleansed, and the disinfectants should be thoroughly incorporated with it. Zeitsch. d. Gesellsch. Aerzte Wien. N. Jahrb. Ph. xx. 155.

Hippuric Acid in Urine. Dr. Thudichum reviews the occurrence of this body in the healthy secretion, and discusses the agencies producing its observed but unexplained variation in quantity. J. Chem. Soc. Ch. N. 206. A. D. Circ. viii. 25.

The absorption of Saline Matters by the Skin, while bathing in mineral waters, has been examined by Dr. Willemin, of the Vichy springs, who finds it to take place to a very perceptible extent, and details the circumstances which influence this action. Arch. de Med. J. de Ph. xliv. 448. On the other hand, Parisot's experiments, with simple solutions of iodide of potassium and other salts, show that scarcely a trace of these substances are absorbed by the skin, when applied as liniments. Comptes R. J. de Ph. xliv. 450.

Salicin, when given in considerable doses, has been observed by Dr. Landerer to pass away in the urine unchanged. Arch. Ph. xvi. 197. Ch. N. 1864. A. J. Ph. xxxvi. 336.

Gases in the Urine. M. Morin states that 2·44 volumes of gases are contained on an average in 100 volumes of urine, consisting of 65·40 of carbonic acid, 2·74 oxygen, 31·86 of nitrogen. The percentage of carbonic acid, being a product of combustion, is found to be much greater after violent exertion. J. de Ph. xlv. 396.

Uric Acid concretions. Vigla confirms the statements of Dr. Camera and others that santonin, in large doses followed by castor oil, relieves the agonizing pain of nephritic colic, and prevents its occurrence. J. de Ph. xliv. 162.

VEGETABLE AND AGRICULTURAL CHEMISTRY.

Phosphates in Plants. Terreil's researches indicate that these compounds exist in plants in a soluble state. A filtered infusion of mallow leaves, or decoction of dandelion root, yield, upon the addition of acid, crystals of ammonio-magnesian phosphate. The author concludes that the beneficial effect of some medicinal infusions and decoctions may be due, in part, to the phosphates they contain. Bull. de Thèrap. xliv. 29. Ph. J. and Trans. v. 522.

Production of carbonic oxide by vegetation, as announced by Boussingault, (Proc. 1863, 154) is doubted by F. C. Calvert, who attributes the carbonic oxide, liberated in his experiments, to the action of oxygen upon the pyrogallic acid used in the apparatus. Ch. N. 209. Boussingault also mentions the same source of error. Compts. R. Ch. N. 210.

Crystals in Vegetable Tissues. Dr. Flückiger agrees with Kindt that the crystals in quillay bark are oxalate of lime, the bark also contains tartrate of lime. Those met with in tamarinds are tartrate of lime. The crystals in guaiacum bark are also oxalate of lime. Vierteljh. Ph. xii. 569. A. J. Ph. xxxvi. 110.

The effects of age upon the grains of cereals, are shown by the researches of De Luca upon the corn and bread found in Pompeii. After 18 centuries the corn had lost all its starch, sugar and gluten, and the bread, on its exterior surface, had been affected similarly. J. de Ph. xliv. A. D. Circ. viii. 45.

Respiration of Fruits. Fremy's experiments, upon the growth and maturation of fruits, have shown that while still green they act like the leaves, in decomposing carbonic acid and evolving oxygen, but while ripening they evolve carbonic acid at the same time that they lose their tannic acid, acids and sugar. During their decomposition air enters the cellules, and the alcoholic fermentation ensues. Compts. R. Ch. N. 229.

Cahour's experiments confirm those of Fremy. Cahour finds the amount of carbonic acid evolved by ripe fruits to be greater in diffused light than in darkness. Carbonic acid and nitrogen were also obtained from the juices of apples, oranges and citrons. Compts. R. Ch. N. 227. A. J. Ph. xxxvi. 338.

Phosphorus and Nitrogen compounds as fertilizers. Ville has experimented on the relative value of the phosphate, phosphite and hypophosphite of lime, in growing wheat, each being used in such amount that the same quantity of phosphorus was employed in every case. Ignited sand, containing nitrate of potassa corresponding to 11 grammes nitrogen, constituted the soil. The results are as follows: Weight of ripe plants, manured with phosphate lime, 21 grammes; with phosphite lime 3·2 grammes; with hypophosphite lime 1 gramme. Similar experiments were tried with nitrate and nitrite potassa, resulting very much in favor of the nitrate. J. Ch. Soc. Ch. N. 221.

ANALYTICAL CHEMISTRY.

GENERAL REMARKS.

Assay Balances. For a notice of a very delicate balance of American manufacture, see Am. Journ. Ph. xxxv. p. 421; (from Proc. Am. Phil. Soc.)

Platinum Crucibles. Dr. Hager mentions some of the operations in which platina crucibles cannot safely be used. Jour. de Pharm. Ch. News, 187.

Photometric observations. Z. Roussin has proposed the use of a mixture of nitroprusside of soda, and perchloride of iron, as a very sensitive liquid for the determination of relative amounts of solar light. The effect produced is estimated by the differences in the specific gravity of a standard solution, occasioned by the deposition of the blue precipitate upon its exposure to light. J. de Ph. xliv. 480. A. J. Sci. and Arts, xxxvii. 408.

Paper as an analytical agent. A band of paper, dipped into a mixed solution, as suggested by Schönbein, acts by reason of its capillarity in separating certain constituents. Goppelsröder has tried this plan in certain coloring liquids, and has succeeded in obtaining distinct colorations from the presence of different bodies at the same time. Lancet, 1862. A. D. Circ. viii. 116.

Application of Dialysis. M. L. Grandeau has demonstrated the applicability of this process to the separation of very minute traces of digitaline, morphia and brucia from animal matters in medico-legal investigations. Compts. R. lviii. 1048. Ch. N. 241.

Drying of adhesive substances. Reischauer, by means of quicklime, dried chloride of calcium, &c., placed in a vessel of ether in which the substance to be dried is immersed, has succeeded in desiccating a variety of vegetable and animal matters which are usually difficult to obtain in a dry condition. Dingl. Polyt. J. 170, 51. Zeits. An. Ch. ii. 410.

Estimation of Gases in Mineral Waters. Robinet has proposed a method for this purpose, founded upon the liberation of the gases from water by the addition of alcohol. This liberation of gases produces a cloudiness, as is observed in the case of ordinary water. When collected in a suitable apparatus over mercury their volume is at once seen. Ann. Ch. Phys. 1863. Ch. N. 190. This method is described at length in J. de Ph. xlvi. 57.

Analysis of Sulphuretted Waters. M. E. Filhol points out the liability to error in the method of Dupasquier, when operating upon liquids containing carbonate or silicate of soda, with the monosulphuret of sodium, on account of the formation of iodoform. J. de Ph. xlv. 393.

ACIDS AND HALOGENS.

Phosphoric Acid. R. Warrington recommends the use of citric instead of tartaric acid in the process for the estimation of phosphoric acid as an ammonio-magnesian precipitate. J. Chem. Soc. 1863, 305. Ch. N. 188.

M. A. Reynoso proposes to separate phosphoric acid from its combinations with potassa and soda, when in nitric solution, by producing with it, by means of granulated tin, a stannic compound, perfectly insoluble in nitric acid and water. Comptes R. Ph. J. and Trans. v. 119.

A ready method for the volumetric estimation of the amount of this acid in bones, guano, &c., and manures, is proposed by Dr. Schwartz, founded upon its reaction with nitrate of lead. Ch. N. 204. Zeits. An. Ch. ii. 394.

Nitric Acid. Rose proposes decomposing nitrates by ignition with four to six parts silica as a means of estimating, by its loss, the amount of nitric acid. The presence of sulphates or chlorides does not interfere with this method. Pogg. Annal. Ph. J. and Trans. v. 78.

Karsten states that one one-hundredth part of a milligramme may be detected in a cubic centimetre of water by means of brucia, and states the precautions to be observed in using this test. Ann. Ch. u. Ph. cxxv. 224. A. J. Sci. and Arts, xxxvi. 268. A. J. Ph. xxxv. 550.

J. Sprengel prepares a mixture of 1 part phenyl, 4 parts sulphuric acid and 2 parts of water, as a test for nitric acid and nitrates, of extreme delicacy. One-sixth-millionth part of a grain of nitric acid has been detected by it. A reddish-brown color results upon evaporating a few drops of the solution upon a nitrate, becoming yellow by ammonia. J. Chem. Soc. 1863, 396. Ch. N. 206. A. D. Circ. viii. 24.

J. Horsely does not consider this test superior to that by pyrogallic acid. Ch. N. 207.

Sulphuric Acid. A standard solution of nitrate of lead is preferred by Dr. Schwartz to that of baryta in the volumetric estimation of sulphuric acid. Ch. N. 204. Zeits. An. Ch. ii. 392.

Estimation of Bromine with Chlorine. G. C. Wittstein weighs together their silver salts, and converts the whole into the bromide by boiling with bromide of potassium; the difference between the amount of bromide of silver thus found and the previously ascertained joint weight of the chloride and bromide, multiplied by 1·795, gives the amount of bromine in the original solution. Zeits. An. Ch. ii. 157.

ALKALIES, ALKALINE EARTHS AND EARTHS.

Estimation of Sulphuric Acid in Salts of the Alkalies. S. W. Johnson separates the small amount ($1\frac{1}{2}$ to 2 per cent.) of alkaline salts which are carried down by the precipitation of sulphate of baryta from an alkaline sulphate, and which are not removed in washing, by digesting the precipitate in a cold saturated solution of neutral acetate of copper with some acetic acid for ten to fifteen minutes, at a nearly boiling heat, and with constant agitation. The alkaline salts are thus decomposed, and may be removed by washing. A. J. Sci. and Arts, xxxvii. 121. Ch. N. 224.

Estimation of Potassa and Soda. P. Collier, by means of a standard solution of nitrate of silver, finds the method of estimating these bodies from the amount of chlorine contained in a given weight of their mixed chlorides, to be both accurate and readily performed. A. J. Sci. and Arts, xxxvii. 344.

Alumina. Jos. Hanaman found that 1 part of freshly precipitated hydrate of alumina was dissolved in 18 752 parts solut. ammonia of 3·93 per cent.; also, that chloride of ammonium prevents the solution of hydrate of alumina to any appreciable amount in solution of ammonia; and that hydrate of alumina is entirely insoluble in a solution of chloride of ammonium. Vierteljh. Ph. bd. xii. p. 527. A. J. Ph. xxxvi. 108.

Lime. Wittstein calls attention again to the fact that the method of separating lime from magnesia by oxalate of ammonia, is unreliable when the magnesia is considerably in excess. Vierteljh. Ph. bd. xiii. pp. 14, 97.

HEAVY METALS.

Arsenic. Dr. Blondot calls attention to a source of error in Marsh's test, by the formation of a stable hydride of arsenic in the gas-generator, under certain circumstances, by nitrous compounds. Ann. de Chim. et de Phys. Chem. News, 191. A. J. Ph. xxxv. 522.

Dr. Rieckher finds that, when nitrates are present in Marsh's apparatus, they may be reduced under certain circumstances by the hydrogen, with the formation of ammonia, which, neutralizing the acid, may retard or even stop the operation. Chlorates act in like manner. N. Jahrb. Ph. xx. 3. A. J. Ph. xxxvi. 107.

In testing for Arsenic, Dr. A. Claus calls attention to the possibility of mistaking a sublimate of sulphide of mercury for the arsenical mirror, which, on account of its black color arising from its finely divided state, it sometimes resembles. Ann. Ch. Ph. 1863, 209. Ch. N. 225.

Lead. Dr. Schwartz proposes an improved method for the volumetric estimation of lead by means of bichromate of potassa. Ding. Polyt. J. Ch. N. 204. Zeits. An. Ch. ii. 378.

Mercury. F. C. Schneider states, the smallest traces of this metal may be detected by immersing in the suspected solution the poles, which should be of gold, of a galvanic battery. The gold amalgam thus formed at the negative pole is transferred to a test-tube, which is to be hermetically sealed and heated. The mercury is sublimed, and collects at the farther end of the tube; a fragment of iodine then introduced into the tube is converted by heat into the easily-recognized red iodide. N. Jahrb. Ph. xx. 309.

Volumetric Estimation of Mercury. J. Personne proposes a method for the estimation of this metal as bichloride, by means of iodide of potassium. The point of complete saturation being known by the appearance of a red tint, due to the liberation of binoxide, which precipitates in the slightest excess of bichloride. It is essential to accuracy in this process, that the mercurial solution should be poured into that of the alkaline iodide, and not vice versa. The process of Rivot is found the best for converting a mercurial compound into the state of bichloride, viz., by passing a current of chlorine through a solution of hydrate of potassa or soda, containing the mercurial compound. Comptes R. lvi. 63. Ch. N. 196. Zeits. An. Ch. ii. 381.

Volumetric Estimation of Iron. J. Davies estimates iron, when present in small quantity, very accurately, by converting it into perchloride, and comparing the color produced by a given bulk of the solution and a standard solution of sulpho-cyanide of potassium, with that produced with a standard solution of perchloride of iron and the last-named test-liquid. Ch. N. 200.

Volumetric Estimation of Copper, Nickel and Zinc. Dr. C. Kunsel proposes a standard solution of sulphide of sodium, as the precipitant for copper in ammoniacal solution; the precipitant being added until a drop of the mixed solutions ceases to color freshly made sulphide of zinc. The same precipitant is used in the case of nickel, the complete precipitation of the nickel being known, when a filtered drop fails to act upon an ammoniacal solution of silver, or nitro-prusside of sodium. A standard solution of chloride of nickel is recommended as the test liquid in the precipitation of zinc. J. f. Prakt. Ch. 1863, 486. Ch. N. 190. Zeits. An. Ch. ii. 373.

Estimation of Copper. Millon and Commaille contribute observations upon the method of estimating it as binoxide. These chemists prefer weighing it in its metallic state. They give the equivalent of copper, mean of three experiments, 394·55. Comptes R.

Volumetric Estimation of Manganese, Antimony and Uranium. By A. Guyard. See Ch. N. 211.

Estimation of Sulphur. Bottomley has not found Pelouze's method for this purpose accurate, owing to the fact that chlorate of potassa does not act merely as an oxidizing agent, but gives up chlorine. Ch. N. 229.

Volumetric Estimation of Iron and Manganese. M. Mittenswey estimates these metals by the amount of oxygen which a given bulk of the solution of their protoxides will absorb from the air. J. Prakt. Ch. 1864, 81. Ch. N. 234. A. J. Ph. xxxvi. 318.

ORGANIC ACIDS.

Tannic Acid. Dr. D. W. Gerland estimates tannic acid in vegetable matters, as tannate of antimony, using a standard solution of tartar emetic as the precipitant. Chloride of ammonium is used to keep the gallic acid in solution, and render the tannate of antimony insoluble. Chem. News, 1863. Am. J. Ph. xxxv. p. 521. Zeits. An. Ch. ii. 419.

Tannic and Gallic Acids. M. Mittenswey founds a ready process for their volumetric estimation, by their absorption of oxygen when in alkaline solution. The ingenious apparatus employed, and the details, are described in J. Prakt. Ch. 1864, 81. Ch. N. 234. A. J. Ph. xxxvi. 314.

Wildenstein makes use of the action of tannic acid upon citrate of iron, in testing its amount in astringent substances. Papers soaked in a standard solution of citrate of iron, and dried, are dipped into a decoction of the substance to be examined, made of a given strength, and the coloration thereby produced compared with those of a previously prepared series of papers made by exposing the different ferruginous strips to solutions of tannic acid of gradually increasing strength. Zeits. An. Ch. ii. 137.

Cream Tartar and Tartaric Acid in Wines. Berthollet and Fleurieu determine the amount of cream tartar in wines, by precipitating it from solution by the addition of 5 parts of a mixture of alcohol and ether in equal portions, and estimating its acid by a normal solution of baryta. The amount of free tataric acid is ascertained by dividing the wine into two equal portions, neutralizing one exactly with potassa, adding this to the other, and treating as above: the excess of precipitated cream of tartar obtained corresponds to the amount of free tartaric acid. J. de Ph. xliv.

Estimation of Hydrocyanic Acid in Bitter Almond Water. Souchay, after a series of experiments, recommends as the best method, the precipitation by nitrate of silver, subsequently adding ammonia until the solution becomes clear, and immediately dropping in nitric acid to excess. The cyanide of silver is then to be collected, washed, dried, and weighed. Zeitsch. Anal. Ch. 1863, 180. N. Jahrb. Ph. xx. 35.

ORGANIC ALKALOIDS.

Morphia, Narcotina, &c. F. F. Mayer has shown the applicability of his volumetric method for the estimation of alkaloids to the ready and accurate assay of opium and its preparations. A. Journ. Pharm. xxxv. p. 385. Ch. N. 201.

Ad. Vincent calls attention to the uncertainty of the indications afforded by nitric and iodic acids and perchloride of iron of the presence of morphia in medico-legal investigations. J. de Ph. xliv. 294.

Qualitative Analysis of Alkaloids. J. Erdman points out the course to be pursued in the recognition of organic bases, by means of their reaction with sulphuric acid containing a little nitric acid, and sulphuric acid with peroxide of manganese. J. Prak. Ch. A. D. Circ. vii. 139.

Delffs employs the platino-cyanide of potassium as a reagent for the alkaloids. J. de Ph. xlv. 187.

Morphia. In using the iodic acid test, Dr. A. Dupré recommends adding, if the alkaloid or its salts are in a solid state, a drop of a solution of starch, and evaporating to dryness. The residue, moistened with iodic acid, should then give a dark blue color if $\frac{1}{10,000}$ of a grain be present. If the alkaloid is in solution, the mixture, morphia, iodic acid and starch, should be allowed to stand ten minutes, and then a very dilute solution of ammonia should be carefully added. $\frac{1}{1000}$ of a grain may thus be detected. A. J. Med. Sci. 1864, 493.

Husemann examines the delicacy of the sulphuric acid test for morphia and narcotina, and its value in medico-legal investigations. Ann. Ch. Ph. cxxviii. 305. N. Jahrb. Ph. xxi. 156.

Anilina and its Derivatives. F. F. Mayer states that these bodies share with the somewhat similar alkaloids of sanguinaria, &c., the property of being precipitated by iodide of mercury. He has founded upon this fact a process for estimating rosanilina in coloring mixtures and preparations. Am. J. Ph. xxxv. p. 401.

SUGARS, AND OTHER SUBSTANCES.

Animal Albumen. J. Lightfoot states an aqueous solution of camphor coagulates albumen, and that it may thus be separated from a mixture of other organic matters sufficiently pure for weighing. Ch. News, 188.

Estimation of Sugar. E. Brunner dissolves the suboxide of copper precipitated in Fehling's method in a solution of chloride of iron, and estimates the subchloride thereby formed by means of bichromate of potassa. Polyt. Centralhalle, 1863, 561. Zeits. An. Ch. ii. 232.

Starch. Dragendorff describes the precautions which must be taken in ascertaining the amount of starch in various seeds, &c., and gives a table of the percentage determined by him in wheat, rye, potatoes, &c. &c. Ph. J. Zeitsch. f. Russl. 1862. A. D. Circ. vii. 122.

Potash—alum, and the sulphates of ammonia, potash, and soda have been shown by Goppelsröder to be among the salts which retard or even prevent the reaction of starch with iodine. Pogg. Ann. 119, 57. Zeits. An. Ch. ii. 308.

Respectfully submitted by

Geo. J. Scattergood,
Geo. C. Close,
James T. King,
N. Hynson Jennings,
P. W. Bedford.
Com. on Progress of Pharmacy.

REPORT OF THE CORRESPONDING SECRETARY.

At the last meeting of the American Pharmaceutical Association a resolution was adopted, directing the Corresponding Secretary to address the publishers of such Pharmaceutical and Chemical Journals, in foreign countries, as would be of value to our Committee on the Progress of Pharmacy, asking an exchange of their Journals for the volume of Proceedings of this Association; and authorizing any expenses incurred, in carrying out said resolution, to be defrayed by drawing upon the Treasurer.

In accordance with this resolution a copy of it was forwarded, with a volume of the Proceedings, to the publishers of the following Journals:

Pharmaceutical Journal and Transactions, London.
Chemical News, London.
Chemist and Druggist, London.
London Lancet, London.
Journal de Pharmacie et de Chemie, Paris.
Répertoire de Pharmacie, Paris.
Annalen der Chemie u. Pharmacie, Leipzig.
Neues Repertorium f. die Pharmacie, Munich.

Neues Jahrbuch f. die Pharmacie, Speyer.
Vierteljahresschrift f. Pharmacie, Munich.
Archiv der Pharmacie, Hanover.
Chemisches Centralblatt, Leipzig.
Canstatt's Jahresbericht für Pharmacie, Würzburg.
Oesterreichische Zeitschrift für Pharmacie, Vienna.

Several of these Journals were directed to be sent at the expense of subscription, but they have not yet reached the Committee.

Thus far the only Journals received, in response to this resolution, are the

Chemical News,
Chemist and Druggist,
Canstatt's Jahresbericht für Pharmacie,
Neues Jahrbuch f. Pharmacie,
Vierteljahresschrift für Pharmacie.

As the latter has been received within the past week, it is quite probable that other of the Continental Journals may yet be received. It would be desirable that this exchange should be extended to other journals, and it is suggested that the Corresponding Secretary should, in future, be requested to furnish a copy of our Proceedings to all desirable journals, with a request for exchange.

A resolution was also adopted, expressing the pleasure and satisfaction with which this Association has learned the formation of a similar body in Great Britain, inviting their friendly co-operation and correspondence in advancing our profession, and directing that a copy of the resolution, signed by the proper officers of this Association, be transmitted to the President of the British Pharmaceutical Conference, with a request for an exchange of published proceedings. In compliance with the above, the Corresponding Secretary, under date of February 25th, forwarded a letter and copy of Proceedings to Mr. Henry Deane, President of said Conference. The engrossed resolutions were detained for some time afterwards.

The following reply was received :

Clapham, London, July 15th, 1864.

To P. W. Bedford, Esq., Honr. Sect. of the American Pharmaceutical Association.

Dear Sir :—Your letter of February 25th, and the volume of Proceedings of the American Pharmaceutical Association were received in due course, through the hands of Mr. Squire, of Oxford Street, London, but the engrossed resolutions have not yet arrived. This circumstance, added to the Executive Committee not having met, has delayed the acknowledgment of your communication.

I have to thank you, in the name of the British Pharmaceutical Conference, for the honor you have done them in thus, at the very onset, recognizing their existence, and their desire to promote the best interests of Pharmacy; and should the future operations of the Conference render separate publication of their Proceedings and Transactions needful, they will be most happy to forward you a copy of the same.

At present, the Conference being composed of the members of the Pharmaceutical Society of Great Britain—with a few of whom it originated—and others not connected with that Society, it has been decided to publish everything through the medium of the Pharmaceutical Journal, which, I am informed, is regularly sent to you, and that the Society as regularly receives the volume of your Proceedings.

The next meeting of Conference is to take place at Bath, on the 13th and 14th of September next, at the commencement of the meeting of the British Association, when I shall have the great pleasure of laying your friendly communication before, I trust, a large meeting of members of Conference, who will doubtless fully appreciate your recognition of their body, and sympathy with them in their endeavors to promote the general interests of Pharmaceutical Science, and the dignity and prosperity of our common brotherhood.

I have the honor to be, dear Sir, yours faithfully,

Henry Deane,

President of the British Pharmaceutical Conference.

In compliance with the Constitution, the Corresponding Secretary has addressed the various local Pharmaceutical Associations, and has obtained the following information:

The Massachusetts College of Pharmacy is represented as being in a good condition. Monthly meetings of the Board of Trustees are held as usual, and are well attended. Although not much attention has been given, in a public manner, to the education of apprentices, still members of the College have taken special pains, in their individual capacity, to offer to clerks in their employ all the facilities necessary for a good pharmaceutical education. It might be expected that the College would show more fruits from its works, on account of the extended surface of territory embraced within its limits, but this, probably, is the reason why more has not been accomplished, owing to the distance of members apart. Members from a distance, however, have taken an interest in the movements of the College, evinced by correspondence upon subjects of importance to Pharmacy. The early closing movement, closing at 9 P. M., has been adopted by some of the leading Pharmaceutists of Boston, and much good is expected to be accomplished, by giving to principals, as well as clerks, time for reading and relaxation; and also, in a measure, to disabuse the public mind of the fallacy of supposing the Apothecaries, as a special class, were expected to be found always at work, time being an essential requisite in perfecting young men for the duties of efficient pharmaceutists.

THE COLLEGE OF PHARMACY OF THE CITY OF NEW YORK.—During the past year this College has attained greater success in its course of instruction than heretofore. The class numbered 32 and graduated 4. Its present Professors are Ferdinand F. Mayer, who fills the chair of Chemistry, and George Thurber, the chair of Materia Medica and Pharmacy.

The College has met a serious loss in the death of John Meakim, who had filled the various offices of Secretary, Vice-President and President for 21 years.

During the past year several conversational meetings have been held, and much interesting information was thus elicited.

THE PHILADELPHIA COLLEGE OF PHARMACY.—Since last report, the School of Pharmacy has held its Forty-Third Session. The class numbered ninety-three, of whom eighteen graduated in March last, after the usual examinations. Near the close of the session it had the misfortune to lose, by death, one of its valued Professors,—Dr. Robert P. Thomas,—who for thirteen years had occupied the Chair of Materia Medica very ably and successfully. After an interval of several months, the vacancy thus occasioned was filled by the election of Edward Parrish, who has, in this new position, an excellent opportunity to increase his already favorably known reputation as a teacher of pharmaceutical science.

The Journal of Pharmacy, published by this College, continues to be issued regularly, in bi-monthly numbers. The only change made is a slight reduction in the number of pages.

In other respects, this Institution is getting on quietly and successfully, under the supervision of the same officers as guided it last year.

The Maryland College of Pharmacy continues highly prosperous, its pecuniary condition being better than ever before. The prospect for a larger class than usual in attendance upon the lectures of the school is highly flattering.

On account of the temporary absence of Prof. A. M. Mayer, in Europe, the Chair of Chemistry is now vacant; but it is expected to fill it in a few days by the election of a competent gentleman.

The influence of this College increases from year to year. Its Alumni are sought after as assistants by many of those who are not members of the College; and a spirit of emulation actuates most of the apprentices of the shops of the city.

For several years past the necessity of uniformity in the strength and preparation of many non-officinal remedies prescribed by the physicians of Baltimore has been felt; and some months since, a committee was appointed to collate and frame formulæ for such preparations as Bitter Wine of Iron, Elixir of Valerianate of Ammonia, &c. That committee, after much labor, reported a number of formulæ, which were adopted by the College.

The Cincinnati College of Pharmacy, during the past few years, has suffered by its proximity to the field of contest. At the latest it had not yet been decided whether a course of lectures would be given during the ensuing winter, but it is believed that the presence of the American Pharmaceutical Assotion at this time will exert a beneficial influence on this College.

The Chicago College of Pharmacy has recently issued a circular, desiring to awaken a more lively interest in its behalf, by the members of the profession resident in that city. It is hoped that it will result in a well established and largely attended course of lectures.

The St. Louis Pharmaceutical Association retains its organization, though we learn that no meetings have been held for a year past. Some efforts have been made to establish a College of Pharmacy in that city, and it is hoped that it will be attended with success.

P. W. Bedford,
Corresponding Secretary.

REPORT ON THE DRUG MARKET.

The Chairman of your Committee on the Drug Market feels compelled to express again his opinion of his unsuitableness for this position, for various reasons which he stated previous to his appointment to the same,—namely: 1. The want of sufficient time to devote to such an important report; and, 2. His unfamiliarity with the market. Of these two, the second is the weightiest one. It is true that, by virtue of his position in the United States Army Laboratory at Philadelphia, he has to handle a great many drugs, to examine and to pass or reject them. But this alone does not give him an insight into the market.

The writer's time is so completely occupied with the practical working of the laboratory, that it would be impossible for him to attend also to the purchasing of drugs, which frequently have to be hunted up in different localities. Purchases are effected for this Government establishment through the Medical Purveyor of this post, through the agency of a reliable drug broker, or directly from parties holding the required drugs. Hence, every thing received has passed inspection already, and it occurs but rarely that drugs thus obtained have to be returned; and when it occurs, it is generally one among a number of unbroken packages, in a partly damaged condition or accidentally sent by mistake. Thus, we rejected, on one or two occasions, some colchicum seed, received in a mouldy condition, and once some article resembling shoemakers' wax, probably what is called black rosin, put up in rosin barrels, and sent instead of it. If there are many inferior drugs in our market, dealers must certainly be shy in offering them here, knowing full well the close scrutiny they are subjected to when received; and our broker, having received instructions to select only articles of prime quality, has never purchased any goods of an inferior grade.

In reviewing the market for the last year, we will find it still unsettled, though not in the same degree as during the previous year. Since the political and financial policy of our Government has been more fully developed, and since the military affairs of the Union again infused the hearts with brighter hopes for the future, the drug market has again assumed a condition more closely analogous to that we were wont to see it heretofore, than has been the case during the year just preceding the present one. Speculation in drugs is not so wild now as it used to be during the first period of the rebellion, though it is carried on, like in other mercantile pursuits, in certain articles, whenever an unfavorable condition for a continued supply of ordinary wants presents itself. Similar conditions will always exist where unusual demands occur: that is, the immediate supply will then frequently be inadequate for the immediate wants, as in every instance of the breaking out of a war; hence the prospective rise in price and the speculation upon such and similar contingencies.

The continuance of the war for the supremacy of the Union and the lawful Government, has pointed out the probable wants of our armies and opened the various channels to supply them sufficiently. The establishment of laboratories for the manufacture of the medicinal preparations used in the army hospitals, is, I am persuaded, one of the circumstances which have had a salutary effect upon the importations; the certainty that such a large consumer, like the Medical Department of the Armies of the United States, will reject every drug and preparation not of standard quality, must have created greater caution in the selection of drugs. Looking at the whole, we may say that the drugs generally, and more particularly the more important ones, are of good quality, though inferior articles, as in every other branch of business, can undoubtedly be found; the better and even the best qualities of drugs are now more generally demanded, even by druggists who used to be contented with articles of an inferior grade, and the high price of gold and foreign exchange alone must have had the effect upon importers to be more careful in their selection.

The prices of all articles in the drug line have advanced considerably, but, as a general rule, have only kept pace with the advanced rate of gold as compared with our currency, and many articles will this day be found lower than in former years, if their market value is reduced to specie. Foreign price-lists, as a general thing, quote low prices, and the supply of most articles appears to be good abroad.

In making out a list of prices, it is impossible to follow all the fluctuations of the market during the last year; as remarked before, they usually followed the price of gold and foreign exchange, except the articles indigenous in the loyal States, which are mostly but little higher in price than several years ago. It was, therefore, deemed proper to quote only the average prices of the latter part of last August, and it is to be understood that they are the prices for unbroken packages.

It had been my desire to obtain for this report, information upon all the leading drugs, and as many of minor importance as possible. My application to Mr. Harrison Smith, drug broker, of Philadelphia, has been very kindly complied with. The whole has been brought into tabular form, and embraces, in general terms, the supply, quality and price.

NAMES.	SUPPLY.	QUALITY.	PRICE.	REMARKS.
I. DRUGS.				
1. ROOTS, CORMS, &C.				
Aconitum	Small.	Good.	$0 40	
Althæa	"	"	35	
Belladonna	"	"		
Columbo	"	Fair.	40	
Cimicifuga	Ample.	"	10	
Colchicum	Small.	Good.	25	
Gentiana	"	Fair.	22	
Glycyrrhiza	"	"	16 to 25	
Helleborus niger	"	"	18	
Ipecacuanha	Ample.	Good.	$6 00	
Krameria	Small.	"	60	
Pareira brava	"	"	30	
Podophyllum	Large.	Fair.	12	
Sanguinaria	Small.	"	20	
Sarsaparilla, Honduras	"	Good.	60	
" Rio Negro.	"	"	90	
" Mexican	"	"	45	
Jalapa	Ample.	Fair.	$3 25	Some contain many small tubers, frequently also the fusiform. A large lot of excellent quality was lately received at the U. S. A. Laboratory, being entirely free of the fusiform variety and with but little of small tubers.
Rheum, Russian	Small.	Good.	Nominal.	What is generally sold in our market as Russian rhubarb, is an imitation, having a less aromatic odor and containing but few crystals of oxalate of lime; it is held at about $12 per ℔.
Rheum, Chinese	Ample.	Good.	3 25	
Scilla	Small.	"	14	
Senega	Plenty.	"	1 25	The supply comes now mostly from Iowa.
Serpentaria	Small.	Good.	2 50	
Spigelia	"	Fair.	1 25	
Taraxacum	"	"		

NAMES.	SUPPLY.	QUALITY.	PRICE.	REMARKS.
Valeriana, German	Ample.	Good.	40	
Valeriana, English	“	Good.	$0 34	Vermont furnishes this root now in considerable quantity, but not equal in quality to the German.
Veratrum album	Small.	“	20	
“ viride	“	“	35	
Zingiber, Jamaica	Ample.	“	60 to 70	
“ East India	Small.	“	40 to 42	
2. WOODS AND STEMS.				
Dulcamara	Good.	Good.	20	
Guaiacum	Plenty.	“		
Hæmatoxylon	Small.	“	$34 to 70	Per ton.
Quassia	“	“	04	
Sassafras medulla	“	“	30	Per ounce.
3. BARKS.				
Angustura	Small.	Good.	28	
Canella alba	“	“	14	
Cascarilla	“	“	14	
Cinchona calisaya	Ample.	“	1 90	
“ rubra	“	“	1 30	
“ Carthagena	Small.	“	60	
“ other varieties	“	Poor.	25	
Cinnamomum, Ceylon	“	Good.	1 75	
“ Chinese	Ample.	Fair.	80	
Mezereum	Small.	Good.	80	
Nectandra	“			
Prunus Virginiana	Large.	Fair.	17	
Sassafras radicis cort.	Fair.	Good.	18	
4. HERBS AND LEAVES.				
Aconitum	Small.	Good.	30	
Belladonna	“	“	45	
Conium	“	“		
Buchu, long	“	“	1 00	
“ medium	“	“	85	
“ short	Ample.	“	65	
Digitalis	Small.	“	20	
Hyoscyamus	“	“	60	
Matico	“	“	2 50	
Rosmarinus	“	“	20	
Sabina, European	“	“	10	
Senna, Alexandria	Large.	Fair.	30 to 40	
“ Tinevelly	Small.	Good.	35	
“ East India	“	Fair.	22	
Uva ursi, French	Ample.	Good.	20	
“ American	“	“	12	

NAMES.	SUPPLY.	QUALITY.	PRICE.	REMARKS.
5. FLOWERS.				
Anthemis	Large.	Good.	$0 30	
Arnica	Small.	"	50	
Lavandula	Large.	"	16	
Rosa gallica	Small.	"	85	
Santonica	"	"	35	
Crocus	"	"	$30 00	This is the true saffron; most of what is sold under that name is adulterated with safflower, and is held at $4 and upwards.
6. FRUITS AND SEEDS.				
Anisum	Fair.	Good.	32	
" stellatum	Small.	"	1 60	
Capsicum	Fair.	"	50 to 55	Bird pepper.
" American	Plenty.	"	20	
Cardamomum, Malabar	Small.	Not prime.	3 50	
" other kinds	Fair.	"	2 75	
Carum	"	Good.	20	
Cassia fistula	Small.	"	15	
Colchicum	"	"	40	
Coriandrum	"	"	20	
Cubeba	Large.	Medium.	80	
Ergota	Fair.	Good.	1 60	
Fœniculum	"	"	22	
Humulus	"	"	40 to 50	According to age
Ignatia	Small.	"	6 50	
Linum	Plenty.	"	3 50	Per bushel.
Lupulinum	"	"		
Lycopodium	"	"	90	
Macis	"	"	1 50	
Myristica	"	"	1 15	
Nux vomica	"	"	72	
Pimenta	"	"	36	
Piper nigrum	"	"	45	
Sinapis alba	Not large.	Fair.	24	English.
" "	"	"	22	German.
" niger	"	"	28	Trieste.
" "	"	"	22	California. A fictitious article of powd. mustard, I am informed, has appeared in the market. It is put up in kegs, probably old ones, with Coleman's brand upon them and evidently English in origin. The article

NAMES.	SUPPLY.	QUALITY.	PRICE.	REMARKS.
				is composed of corn-starch, some potato-starch, turmeric and capsicum.
Tamarindus	Not large.	Fair.	$0 10	
7. GUMS, RESINS, OLEORESINS, &C.				
Acacia, picked	Good.	Good.	70	
" common	"	Average.	55	
Aloe Barbadensis	Small.	Good.	75	
" Capensis	Fair.	"	45	
" socotrina	"	"	$1 10	
Ammoniacum	Small.	Fair.	50	
Assafœtida	Large.	Good.	30 to 45	
Balsam. Peruvianum	Small.	Fair.	3 50	
" tolutanum	"	"	2 50	A spurious tolu balsam has been noticed in original packages, entirely home-made; its chief constituent is Burgundy pitch.
Benzoinum	Large.	Fair.	1 00	The supply became limited & prices advanced, after which, large lots were imported and are now on hand. I have seen several lots which contained much cinnamic acid.
Camphora	Large.	Fair.	1 50	
Catechu	Small.	Fair.	14	
Copaiba	Good.	Good.	1 40	
Galbanum	Small.	Fair.	65 & 1 00	Crude & strained.
Gambogia	"	"	1 00	
Guaiaci resina	"	Good.	70	
Kino	Very small	"	1 75	
Lactucarium	Ample.	"	8 00	
Manna, large flakes	Small.	"	1 75	
" small "	"	"	1 30	
" sorts	"	"		Very little imported.
Myrrha	Plenty.	"	70	Turkey. Very little East Indian imported now.
Mastiche	Small.	Good.	4 00	
Opium, Smyrna	Fair.	"	17 00	Prices very variable; in June

NAMES.	SUPPLY.	QUALITY.	PRICE.	REMARKS.
				not higher than $13 50.
Pix Burgundica	Small.	Good.	30	
" Canadensis	"	"		
Resina	"	"	$50 to 60	Per barrel of 280 lbs.
Scammonium	Not large.	All grades.		Prices according to quality; the best commands about 40 to 45 cts. per lb for each percentage of resin.
Styrax liquida	Small.	Hardly fair.	44	
Terebinthina, true Venice	Fair.	Good.	35	
" alba	Small.	Fair.	15	
Tragacantha	Good.	All grades.	50 to 1 00	
8. FIXED & VOLATILE OILS.				
Oleum Amygdalæ dulc.	Small.	Good.	80	Allen's; French 45 cents.
" Lini.	Large.	"	1 60	Per gallon.
" Morrhuæ	Small.	"	3 25	" "
" Olivæ	Fair.	Fair.	3 50–3 75	" "
" Ricini	"	Good.	3 70	" " Seeds are now imported and oil made here, whereby the quantity of imported oil is lessened.
Oleum Tiglii	Fair.	Good.	8 00	
" Terebinthinæ	"	"	2 60	Large lots of French are now brought in.
9. FECULAS.				
Amylum, corn	Fair.	Good.	13	
" potato	"	"	09	
Maranta, Bermuda	Small.	"	50	
Tapioca	Large.	"	14	
Sago	Small.	"	22	
10. EXTRACTS.				
Extract. Cannabis Ind.	Good.	Good.	1 50	Per ounce.
" Glycyrrh. Calab.	"	"	48 to 50	
" " Sicily.	Fair.	Fair.	33	
11. ANIMAL DRUGS.				
Cantharis	Ample.	Good.	2 15	
Castoreum, Canada	Good.	"	3 00	I have never met with the Siberian in our market.

NAMES.	SUPPLY.	QUALITY.	PRICE.	REMARKS.
Cera flava	Good.	Fair.	80 to 90	
" alba	Small.	"	$1.10–1.20	
Spermaceti	"	Good.	60	
Ichthyocolla, Russian	"	"	8 00	
" N. England	Large.	"	80	Prices advancing.
Moschus	Small.	"	24 00	Per ounce.
Adeps	Fair.	"	22	Frequently contains over 12 per cent. of water, added to increase its whiteness, and kept mixed by the addition of borax or carbonate of potassa.
Sevum	Small.	Good.	17	
II. CHEMICALS.				
Acid. citricum	Good.	Good.	1 25	
" tartaricum	"	"	1 10	
Alumen (Potassa alum)	"	"	06	
Ammoniæ carbonas	"	"	36 to 38	
" murias.	"	"	24	
Bismuthum	Small.	"	7 00	This metal invariably contains arsenic, & sometimes a notable proportion of copper.
Brominium	Small.	Good.	5 50	
Calx chlorinata	Ample.	Various grades.	09½	There is no difficulty of obtaining it of 30 per cent. active chlorine and over, although I observed one sample as low as 17¾ per ct. During the year the price has been as high as 14 c.
Creasotum	Small.	Good.	2 00	
Glycerinum, English	"	"	1 75	
" American	Good.	"	75 to 1 50	I have seen glycerine made by Gordon, of Cincinnati, and Bowers, of Philadelphia, answering to all the tests of the Pharmacopœia,

NAMES.	SUPPLY.	QUALITY.	PRICE.	REMARKS.
				and well suited for medicinal purposes; it has usually less of the acrid taste of Price's.
Hydrargyrum	Ample.	Good.	$2 00	Within 10 mos. sales were made at 74 cents.
Iodinium	Good.	"	9 00	
Magnesia usta	Small.	"	1 60	
Magnesiæ sulphas	Ample.	"	05	
Manganesii oxidum nigr.	Large.	Pretty good	04	American. This is obtained principally from the neighborhood of Pittsburg.
Manganesii oxidum nigr.	Small.	Good.	08	Saxony.
Morphiæ sulphas	"	"	11 00	Per ounce.
Phosphorus	"	"	2 00	
Plumbi acetas	"	"	65	
" oxidum semivitr.	"	"	17	
Potassæ bitartras	Good.	"	85	
" chloras	"	"	90	
" nitras	"	"	25	
" sulphas	Small.	"	14	
Potassii iodidum	Good.	"	7 00	Pfizer & Co. make it now of very good quality. I still find the French, of Conrad's manufacture, inferior to the English. It sometimes contains KO, CO_2 and KCl. (See also Am. J. Ph. xxvi. 293.)
Quiniæ sulphas	Large.	Good.	3 55	Large lots are held by speculators.
Cinchoniæ sulphas	"	"	58	Per ounce.
Chinoidinum	Good.	"	3 50	Per ℔.
Sodæ boras	"	"	44	Pfizer & Co. manufacture large quantities of this article.
Sodæ carbonas	"	"	05½	Large quantities are manufactured by Burgin & Sons, of Philadelphia.
Zincum	"	"	18	

It will be seen from the remarks contained in the annexed tables, that some of our manufacturing chemists have been extending their sphere of labor, and now enter into competition with foreign manufacturers in some articles that formerly used to be supplied from the other side of the Atlantic. As pharmaceutists, we can only wish that they may be repaid for their undertaking, and that others may follow, so that, at no distant period, the list of articles manufactured at home may embrace nearly every thing that is useful in the arts and in medicine.

In submitting this report, the chairman feels very keenly that it lacks in those remarks depicting the causes of fluctuations in price and quality, which only an intimate acquaintance with the market at large enables one to make. Another deficiency will be found in the want of a statistical report on the importation of drugs, which, though formerly connected with the report on the Progress of Pharmacy; properly belongs to the duties of this Committee. The collection of the data for such statistics is a very arduous task, particularly as far as our principal port of importation and exportation of drugs, namely, New York, is concerned. Such tables would prove in time extremely valuable as a source of reference and comparison, as well as a means of indicating the actual wants of our country, and of stimulating efforts to produce, by home manufacture, what we have to rely for, as yet, upon foreign countries. It would be very desirable that somebody should be found willing to undertake the work, and capable of sifting thoroughly the most interesting facts. Whether, however, this work had better be imposed upon the Committee on the Drug Market, or preferably, perhaps, upon a new committee, must be left for the Association to decide.

Another extremely interesting and important feature that might be embraced in one of these reports, is the actual supply to our various markets of indigenous drugs. We ought to regard this, in connection with the source of this supply, as of the utmost importance, in order to prevent, if possible, the extermination of medicinal plants in certain localities. We are in the habit of denouncing the short-sightedness of the governments and the population of the South American republics in felling the cinchona trees, for the purpose of obtaining their valuable bark, instead of carefully nursing them with the view of preserving them until they have yielded the indispensable drug to their utmost capacity; we applaud the Dutch and English governments for their well directed efforts to transplant the cinchonas to the congenial climate of the East Indies, because we hope that, if successful, the calamity of an insufficient supply of cinchona bark will be prevented. And yet what are we doing at home? The writer knows that in years gone by, senega, spigelia, serpentaria, ginseng and probably other drugs used to be collected in the East, but have become almost completely extinct there, so that we had been compelled to look to the South for a sufficient supply, and since this source has been shut off, to the young and growing states of our great West. It is within the writer's knowledge that, in certain localities in the immediate neighborhood of Philadelphia, cimicifuga, sanguinaria and veratrum viride have almost or entirely disappeared, and it is likely to be similar in other places.

In view of the growing importance of these drugs, does it not become us to pause and reflect upon proper means to be adopted to prevent their complete eradication? Is it, perhaps, not similar with podophyllum, the use of which appears to have largely increased of late years? With a soil adapted to as large a number of vegetable species as can be found anywhere throughout the world; with a climate reaching almost to the tropics in the South, and extending through the entire fertile part of the temperate zone; with a continent stretching from the shores of the Atlantic to the coast of the great Pacific Ocean, and embracing towering mountains, undulating hills and large plains: we ought never to come under the necessity of seeing our own medicinal plants transferred to other continents in order to prevent an exhaustion of supply.

But which are the proper means of guarding against such an occurrence? The writer is not prepared to answer this question fully, or to enter into it to the extent its importance deserves. He would, however, ask your permission to throw out a few hints which appear to him entirely practical and easy of execution, if we are determined to enter upon it with the proper spirit.

In the first place, it appears to be essential to cultivate among the young students of pharmacy and of medicine, a love for that delightful science, botany, and to present to them the opportunity of studying nature's beauteous creatures in the woods and fields. If a love for plants has been once inspired nothing can afterwards eradicate it, and no wanton destruction of them will then take place.

Then it appears to be a proper undertaking for us to chemically examine those perennial plants, of which underground stems, like tubers, bulbs, rhizomas, &c., are employed medicinally, whether by some simple process the same medicinal effect can be produced by the annual overground portions. We must remember that many forms of these subterranean stems shoot up a number of flowering branches, and that, consequently, by digging up what is vulgarly called the root, we may prevent perhaps a dozen of apparently individual plants from appearing.

Finally, we might make it a rule, whenever we come across a valuable plant with ripe fruit, to pick the latter and deposit it in the soil for the germination of the seeds. The writer has frequently planted seeds this way, and was then gratified the year following, on revisiting the same spot, to notice the tender germs, or the more mature plants grown from seeds which might, without the care bestowed upon them, have been lost. To propagate their species, plants produce an innumerable number of seeds, trusting to chance that some one among hundreds or thousands may meet with the proper conditions for germination, growth and fructification. All we have to do then is to attempt to increase those chances under the most favorable conditions, and I feel assured if every one, who is interested in the collection and sale of indigenous drugs of a vegetable origin, would attend to this, that the danger of medicinal plants disappearing from certain localities would be materially lessened.

There are some plants, which, it appears, almost in spite of all the precautions that may be adopted, increase yearly in number, and advance steadily to other localities. We usually term them weeds, and find but few among them that may be considered as valuable remedial agents. Although for the last two years the writer has been unable to devote any time to practical botany, still he has noticed that, for some years past, Chenopodium ambrosioides, var. anthelminticum, has been continually gaining ground in and around Philadelphia, in such a measure that it bids fair to become there as plentiful as on the commons and vacant lots of Baltimore.

From the city named, we have two interesting reports appended to this one. Wm. S. Thompson, a member of your Committee, has induced Mr. J. J. Thomsen, of the firm of Thomsen & Block, to contribute some remarks on the Baltimore Drug Market, and particularly on some indigenous drugs; he likewise furnishes a list of the imports and exports of drugs and chemicals for the year ending December 31st, 1863.

All of which is respectfully submitted,

JOHN M. MAISCH, *Chairman.*

APPENDIX TO THE REPORT ON THE DRUG MARKET.

The Baltimore Drug Market presents no remarkable new feature this year. The quality of the drugs may be said to be better than formerly, as druggists and apothecaries now look more to quality than price. This change can be attributed to the influence of the Local College of Pharmacy. One of the cardinal principles of this institution is to teach the young and rising pharmaceutist, that their profession is not only one of merchandize, but also of science and integrity; that it will continue to become more honorable and dignified in proportion to their efforts to elevate the standard of remedial agents; that it is their duty to bring into practical and daily use the most efficient drugs, select chemical and pharmaceutical preparations. The highest grades of essential oils are now almost entirely used, and remunerative prices paid for them. Gums of the best quality find the most ready sale.

Roots and herbs are examined with becoming carefulness, and powders of all kinds, when not reduced from their crude state by the apothecary, are traced to their origin with a scrutiny highly commendable to the investigators. Chemicals of the most expensive grades are being more used than formerly, but not so extensively as the best classes of botanic medicines. This arises from the unsettled and doubtful opinion prevailing, whether the merits claimed for them is real or imaginary. A thorough investigation and free discussion of the true and intrinsic medicinal value of many chemical preparations, made by different chemists, and which vary so much in price, would be attended with the most happy and beneficial results. The Foreign Drug Trade of this market is limited for want of direct communications; most of the drugs purchased in foreign markets by importers here come via New York. A review of these articles would, therefore, be a recapitulation of those introduced in the New York reports. Remarks will be confined to indigenous articles, which find their way here from the interior.

SASSAFRAS BARK.

The quantity of this article received here during 1863 may be estimated at 30,000 pounds, and varied in price from 9 to 14 cents. The average quality was only fair; the bark was not as thoroughly cleansed from the epidermis as it should have been, and contained a slight admixture of bark from the tree. Small pieces from the root also adhered to many pieces, and the bright fresh color of the bark was much impaired by packing when too damp, or careless exposure to the weather. Fine handsome bark, of lively orange brown color, taken from vigorous roots carefully cleansed from the epidermis, properly dried in the shade, with bright fracture and strong flavor, has been sparingly received—perhaps not over 1000 pounds, and has freely commanded 15 to 20 cents. .

OIL OF SASSAFRAS.

The quality of this article has been good, no designed adulterations having been apparent. Several lots, not properly separated from water used in distillation, were offered for sale; the color of the oil grades from white to red, but this peculiarity does not seem to affect the quality. The distillers say the color arises from two kinds of roots used in distilling, and the color of the oil varies in the proportion of their use. They make no effort to separate the varieties, as the quantity of yield of all the roots is about the same. The supply this year was about 15,000 pounds, and fluctuated in value from 70 to 85 cents per pound.

OIL OF WORMSEED.

Small quantities have only been produced during the past two years. The quality offered was good, no sophistication having come under notice. The demand was small, and prices ranged as low as $1 per pound, but during the past few months more inquiry was made, and all cheap lots taken up: it cannot now be bought under $2.75 to $3.

WILD CHERRY BARK.

There is a great difference in the quality of this article; few lots have been received, which were strictly prime. As usually received, the barks from the tree and root are mixed, and the epidermis not carefully removed. On close examination, some pieces may be found possessing but little of the bitter almond flavor indicative of good bark. We have seen lots very inferior. Strictly prime bark has also been received. To secure most certainly a strictly prime article of powdered bark, the better plan is to obtain the bark in the crude state, and reduce to fineness as required.

SENEGA ROOT.

The receipts of this article are small compared with former years. The quality, however, is very good. Occasionally small pieces of the plant are attached to the root, and a little ginseng mixed with the root, but not of sufficient amount to deserve any special comment.

WHITE AND RED OAK BARK.

We have seen one lot very handsome, properly dried, of a refreshing odor, and very astringent. It was collected on a private order. This article grows abundantly in this vicinage, but we are not aware of any efforts having been made to introduce it in a properly selected form for medicinal use.

BEESWAX, YELLOW.

The supply has been very well maintained, but prices have ruled high. The quality is also good. Very little tallow or mixed wax being found in the parcels as they come in from the country. Dark and black pieces are not as frequently met with as formerly, and the general character appears to confirm the opinion, that the culture is assuming a more regular and scientific form.

BEESWAX, WHITE.

The high price of yellow wax has had a very trying effect on this article; the difficulty, also, of bleaching certain kinds of yellow wax to a sufficient whiteness has had its influence. A handsome white article, perfectly pure, and suitable for artists' purposes,—such we have seen,—may be called the standard. Many other specimens are mere approximations to it. Some wax of a light straw color, which came under observation, was pure. Other parcels, if whiter, were soft and yielding to the touch, and did not present the appearance of pure wax. They dissolved readily in sulph. ether, which indicated the presence of vegetable wax or paraffine. Too much care cannot be taken in the purchase of this article, and as the test is easy, it should always be made in doubtful cases.

Mayapple Root, Dewberry Root, Blackberry Root and Cohosh have been received in small quantities and of good quality.

CASCARILLA BARK.

Several parcels derived from different sources were found to contain small white substances, presenting to the eye the appearance of lime mortar, but when examined by the microscope showed the characteristic of clay, and in some instances the shells of animalculæ were observed. The inference is, therefore, that these white particles are pieces of the soil on which the cascarilla grows.

OIL OF PENNYROYAL.

has been received in limited quantities, and very superior.

BAYBERRY BARK.

The supply of this article was formerly principally derived from the neighborhood of Norfolk. Within the past few years, however, no stock has been received from there. Recently some has been received, said to come from the Eastern Shore of Maryland; it is a thinner bark, not so astringent, of lighter color than the Norfolk bayberry bark, and is pronounced by judges to be much inferior, and in value equal to about one-half of good bark.

The following list of Drugs and Chemicals imported into and exported from the Port of Baltimore, is selected from the Fourteenth Annual Report of the Board of Trade of Baltimore, for the year ending 31st December, 1863:

IMPORTS.		
Free.		
Dye Woods and Stuffs,		$2556
Paying Duty.		
Acorns, powdered,	1,239 lbs.	35
Brimstone,	3,623 cwt.	5018
Bleaching Powder,	147,045 lbs.	2363
Bark, Peruvian,	909 lbs.	594
Cork—wood,		331
" Manufactures of,		1200
Ginger,	13,513 lbs.	1938
Honey,	13,370 gals.	7781
Liquorice, paste,	46,785 lbs.	8932
Medicines, patent,		459
Oil, palm,	32,893 gals.	15,548
" cod liver,		70
" olive,	399 gals.	92

Oil, canary,	85 gals.	67
" juniper,	65 gals.	112
Roots, medicinal,		38
" dandelion,	201 ℔s.	134
Retorts, clay,		715
Soda, ash,	873,769 ℔s.	10,328
" caustic,	150,582 ℔s.	4703
" bicarbonate,	6,220 ℔s.	1701
" nitrate of,	2,309,431 ℔s.	137,875
Succory,		257
Sumac,		598
Sponge,		33
Safflower,		118
Wax, white,		18
Water, Cologne,		9
" mineral,		108
" Seltzer,		735

EXPORTS.

Alcohol,	15,919 gals.	7985
Bark, oak and other,	578 hhds.	
Chrome ore,		14,778
Drugs, medicinal,		3782
Dyes, prepared, &c.,	1,852.	8155
Ink,		20
Oil cake,	422 tons.	14,616
Perfumery,		52
Spirits of Turpentine,	8,305 gals.	1287
Wax,	2,440 ℔s.	902

SPECIAL REPORTS AND ESSAYS.

ON PREPARATIONS OF CINCHONA.

BY ALFRED B. TAYLOR.

"Is there an eligible means by which the medicinal matter of cinchona may be held in a permanent solution without deposition of cinchotannates or cinchonic red?"

In attempting to answer this query, I supposed the intent of it to be the finding a solvent which shall retain all the remedial properties of cinchona in their natural condition or combination, and without decomposition.

From the peculiar solvent properties of glycerin, it was thought that some combination of this substance with alcohol or sugar might answer the purpose, and accordingly the following experiments were instituted:

A tincture of cinchona was prepared, of the ordinary strength, using a menstruum composed of two parts of alcohol, one part of glycerin and one part of water. After standing for two or three months there was no deposit from it, but the experiment (being only negative in its character) was not considered conclusive; since it does not follow that because after two months there is no precipitate, there will be none after a greater lapse of time. Recourse was had to another experiment; glycerin was added to the fluid extract of cinchona, prepared according to the U. S. Pharmacopœia, in the proportion of one part of glycerin to three parts of extract; upon heating this mixture it speedily became perfectly clear, much sooner than where the extract was heated alone; but upon cooling, the cinchonic red was thrown down and the mixture again became cloudy and opaque.

Another experiment was then tried, the quantity of glycerin being increased, and equal parts of glycerin and fluid extract being used. This mixture, after being heated as before, remained perfectly clear upon cooling. From this experiment it was thought that a fluid extract might be prepared with glycerin alone, which would satisfy the conditions of the query, and an extract was prepared by the following formula:

Take of Yellow Cinchona, in moderately fine powder, eight troyounces.
Glycerin } each eight fluidounces.
Alcohol }
Diluted Alcohol a sufficient quantity.

Mix the glycerin and the alcohol, moisten the cinchona with six fluidounces of the mixture, allow it to stand for half an hour, pack it firmly in a cylindrical glass percolator, and gradually pour upon it, first the remainder of the mixture and then diluted alcohol, until two pints of tincture have been obtained or the bark is exhausted; evaporate this to a pint by means of a gentle heat.

A sample of the extract, as thus prepared, is herewith submitted. It is beautifully clear, possesses all the remedial properties of cinchona in perfect solution, is not liable to change by fermentation, as is the fluid extract of the U. S. Pharmacopœia, and is believed to be in many respects superior to that preparation.

The success which attended this experiment naturally suggests the use of glycerin in the preparation of other apothemic extracts, more especially the astringent ones; (no doubt it would be useful in the preparation of fluid extract of rhubarb;) and it is believed that in the hands of future experimenters it will be found a most useful solvent in such preparations.

It was thought that the addition of acids, or perhaps of alkalies in small quantity, to the menstruum might render the tincture of cinchona a permanent solution, notwithstanding the fact that the character of the resulting preparation would be somewhat modified thereby. The addition of ammonia or potassa to the tincture of cinchona deepened its color, and by dissolving the cinchonic red, permanently prevented its deposition. Upon standing, however, minute crystals of cinchonia or quinia, or perhaps both, were deposited upon the sides and bottom of the bottle containing the tincture, and consequently the preparation was more injured than it would have been by the deposition of the cinchonic red, if the alkali had not been added.

The addition of an acid to the tincture of cinchona seems to render the solution almost, if not entirely, permanent; and, although in this experiment, as in the preceding one, the natural combination of the constituents of cinchona bark is not preserved, it is believed that an acidulated tincture of cinchona would, in very many cases, prove a valuable and desirable preparation.

The following formula is suggested for this preparation:

Acidulated Tincture of Cinchona.

Take of Yellow Cinchona, in moderately fine powder, six troyounces.
Aromatic Sulphuric Acid half a fluidounce.
Diluted Alcohol a sufficient quantity.

Having mixed the acid with a pint of diluted alcohol, moisten the powder with two fluidounces of the mixture, pack it firmly in a glass percolator, and pour upon it, first the remainder of the mixture, and afterwards sufficient diluted alcohol to make the tincture measure two pints.

ON THE EXTRACTION AND PRESERVATION OF LARD.

BY HENRY W. LINCOLN, OF BOSTON, MASS.

"What is the best process for extracting lard, so as to fit it for the purposes of Pharmacy? and what the best means for preserving it for use during the summer and autumn?"

At the last meeting of the Association the above query was accepted by the writer, in hopes to be able to contribute his mite towards the advancement of practical Pharmacy in some of its minor details; but had he thought that the meeting, at which it would be presented, would have been held in Cincinnati, the headquarters of his "Porcine Majesty," he would have been reluctant to have accepted the charge, as it might seem to be a presumption to "beard the lion in his den." Having accepted the trust, however, he will endeavor to dispose of the subject, so as not to offend any of his Cincinnati friends.

The process for extracting lard seems so simple, and the means for preserving it for subsequent use so obvious, that it might be considered by many as entirely superfluous to write anything about it; and yet what pharmaceutist, at all careful of his reputation, would dare to risk it by purchasing or dispensing the article found in the ordinary channels of trade. There is very little lard sold ordinarily that is fit for culinary use, and much less that is fit for pharmaceutical purposes. Decayed pineapples or raspberries and strawberries of an ancient flavor may do for some to use for syrups at the soda fountain; but the best and freshest are "good enough for me;" and I see no good reason why we should be obliged to use lard of bad odor, color and taste, to say nothing of salt, when a good article can be procured so easily, and at very little more expense.

A few simple directions only are necessary, and almost might be included in two words: care and cleanliness. These two words are more important than some imagine in many of the manipulations in Pharmacy, and serve many times to point out directly the difference in two preparations otherwise similarly prepared: care in the selection of the materials, and cleanliness in the manipulations.

In the selection of the fat for the rendering of lard, care should be taken in procuring that called in butcher parlance the "leaves," being that loose fat surrounding the intestines, as free from blood and membranes as possible. That is better which is taken from newly-killed and younger animals, and differs in consistence by the different articles of food, the fat of animals fed on corn and meal being firmer, and generally preferred to those fed on the refuse of cities, or more oleaginous food. Without intending to compare to a disadvantage Western and Eastern pork, I must say that I have always found that Eastern corn-fed pork, of about a year old, makes a better lard than that taken from such Western pork as we get in our Eastern market; but much of the difference may be owing to the fact of the length of time in getting the Western pork to market, which gives it a yellowish cast, and a certain rancidity not easily removed.

The last lot of lard rendered by the writer comprised twenty pounds of "leaves," and yielded about eighteen pounds of clear lard, leaving a loss of ten per cent.

The leaves of lard should be cut up in small pieces, and allowed to remain covered with cold water for a few hours—over one night, for instance—and then pressed with the hand and washed, to remove as much of the blood as possible. Then put it into a water-bath, which in this case was made by two tinned copper kettles, one set into the other, and the inner one particularly clean and bright, over a slow fire, pressing the leaves occasionally against the sides of the kettle with a wooden spatula or skimmer to break up the cells containing the fat. After remaining in the water-bath for two or three hours, take off the kettle containing the fat, and put it over the direct fire, and apply a quicker heat than before, until the leaves almost begin to crisp. This part of the process requires more careful watching. Then take off, and strain through a fine hair sieve. What remains in the sieve, after a gentle pressure, put back into the kettle, and apply still more heat, stirring constantly for a few moments; strain and keep this product separate from the first. This will be found to be somewhat darker than the first, but will be useful for more ordinary purposes. The first product should be allowed to stand still till partly cold, to allow any dirt or water to settle, and then dipped out carefully into the pots intended for it to be kept in. These are best made of glass, stone or tin, not earthen or wooden, filled full and closed up tight, and small enough each to hold about one-fourth of the amount necessary for use for the season, the deeper and narrower the better, allowing as little surface exposed to the air as possible. If put into jars with covers, a strip of paper should be pasted over the seam; if not, use paper covers varnished after having been tied over. The temperature of the weather has some effect on the color, as lard rendered in cold weather is much whiter than that done at a higher temperature. It will add, therefore, much to its whiteness to place the pots of lard while cooling in snow or ice. Lard intended for use during warm weather should be put into small pots, so that only a small surface shall be exposed to the air, and the rest kept in the cellar or refrigerator, and should be put into the pots in a melted state, and not put in after it has become cold, as by the latter method it is more exposed to the air. In dispensing from the retail jar, care should be taken not to leave the lard sticking around the upper part of the jar exposing so much surface, but take it even from the top, unless it has remained some time so as to become rancid, and then the upper surface should be carefully taken off and thrown away, to obtain beneath a fresh surface exposed for use.

For heat in the above process I used a Shaw's three-burner gas stove, which I have used the past year for this and similar purposes, and find it the most convenient arrangement I have seen. Desiring to economize room and have the heat accessible, the stove is placed on a box set on castors; and with a flexible tube attached, it is rolled from out of a closet into the middle of the floor, and rolled back when done using it. I have no doubt but that, in a large way, steam could be used to advantage in the rendering of lard, and perhaps a better product could be acquired, but I have adopted and advise the method as stated above, as being simple and capable of being conducted with apparatus accessible to every one, and yielding a product uniformly good, if conducted with care.

Some may object to using water to wash the lard in at first, as it is considered that any water which should remain in the lard would tend to decomposition; but allowing the lard to stand long enough after straining for the water to settle, I think will obviate that difficulty, and a washing certainly adds much to the appearance of the article.

Those having the convenience of a filter kept hot by a water-bath, can filter the lard through paper, and then by stirring till cold, of course can obtain a whiter and smoother product, but it is nearly certain that the consequent exposure by these means to the air will cause rancidity to commence much sooner.

With regard to the process for making "Benzinated Lard" and "Poplarnated Lard," I have not been able, in the short time allotted me, to try sufficient experiments to enable me to determine the value of the method, but the processes of both have been published, and I have been assured by those who have had some experience in the matter, that the product is highly satisfactory. In using lard for pomatums, the process of washing with water, to remove color and odor, is desirable; but in this case the lard should be melted over after the washing to remove all water contained in it.

With this will be shown samples of pure lard, washed lard, benzinated and poplarnated lard, made by simmering the benzoin and poplar buds in lard, and also some made by strong tinctures rubbed up with pure lard. Those made from the tincture seems the best, particularly the benzoin; and that made from the poplar buds is too dark for most purposes.

In these few rough notes, I have endeavored to impress upon the mind of the hearer, a few important requisites; and although nothing has been written, perhaps, but what was known before, it may not be considered superfluous to repeat what all know, as we very seldom do as well as we know how, and a reminder to our duty is never amiss.

ON THE SOLUBILITY OF CAMPHOR IN WATER.

BY GEO. F. H. MARKOE.

"What is the proportion of *camphor* present in the officinal 'Aqua Camphoræ?'"

To prepare camphor water, in accordance with the directions of the United States Pharmacopœia, we take of

Camphor, 120 grains.
Alcohol, 40 minims.
Carbonate of Magnesia, ½ a troyounce.
Distilled Water, 2 pints.

Rub the camphor first with the alcohol, then with the carbonate of magnesia, and lastly with the water gradually added, then filter through paper.

All the authorities, whose works are at my command, agree in saying that camphor is soluble in 1000 parts of cold water.

Storer, in his "Dictionary of the Solubilities of Chemical Substances," states, "From an intimate mixture, *camphor* with carbonate of lime or carbonate of magnesia, water is said to take up three times as much *camphor* as when shaken with *camphor* alone." Storer makes no mention of the method employed to determine the amount of *camphor* taken up from its mixture with carbonate of magnesia, nor do the authors of the United States Dispensatory state how they prove the presence of "*fifty grains*" of camphor in each pint of the officinal water.

The only hints, contained in the standard works, that suggest a method by which the quantity of camphor in the officinal water might be determined, are the statements that "*solution of potassa*," *sulphate of magnesia* and some other salts will separate *camphor* from its aqueous solution.

To test the truth of these assertions the following experiments were instituted:

1st exp. Two pints of camphor water were treated with solution of potassa, which threw down a bulky flocculent precipitate, which was collected on a small filter and dried between folds of bibulous paper, by which treatment it lost nearly all its bulk, leaving a very small quantity of a light-brown colored substance on the filter, which was insoluble in water and alcohol, but the greater part readily dissolved in dilute hydrochloric acid with effervescence.

2d exp. Sulphate of magnesia was added to two pints of camphor water as long as it caused a separation of camphor, and a few grains were obtained floating on the surface of the liquid.

3d exp. *Four ounces* of chloride of calcium were added to *two pints* of "camphor water," and the camphor which rose to the surface was collected on a filter. Two more ounces of the chloride were added to the filtrate without causing the separation of an additional quantity of camphor. The camphor on the filter was washed with camphor water, dried between folds of bibulous paper, dissolved in a very little chloroform, the solution evaporated spontaneously and the camphor obtained weighed *six grains*.

4th exp. One pint of camphor water was shaken with stronger ether, and set aside to let the ether separate. When this was accomplished, it was carefully decanted from the water and then evaporated spontaneously, but without yielding camphor.

5th exp. One pint of camphor water was treated with chloroform with negative results.

From the above experiments we may conclude that neither of the reagents used possess the power to remove camphor from its aqueous solution more than to a very limited extent, while three —solution of potassa, ether and chloroform—failed entirely.

I then turned my efforts to getting out the undissolved portion of the *camphor* mixed with the carbonate of magnesia. After many experiments the following process was adopted as giving the most satisfactory results :

1st exp. Two pints of camphor water was carefully prepared, and the magma of carbonate of magnesia and camphor remaining on the filter was transferred to a small beaker, and treated with dilute sulphuric acid in very slight excess, thereby dissolving the magnesia as sulphate, while the camphor rose to the surface and was collected on a small filter, washed with camphor water, to remove adhering sulphate of magnesia, dried between folds of bibulous paper, by which means it was obtained in the shape of a dirty, gray cake, mixed with the impurities derived from the carbonate of magnesia and shreds from the filter. To obtain the camphor pure the mixture was treated with chloroform, the solution thrown into a small funnel, the neck of which was stopped with a little cotton; and finally, the camphor obtained by the spontaneous evaporation of the chloroformic solution, was carefully weighed and gave a yield of *fifty-five grains.*

2d exp. With like quantities and manipulation gave a yield of fifty-nine grains.

3d exp. do. do. fifty-four grains.

4th exp. do. do. fifty-six grains.

The average amount obtained by these experiments being fifty-six grains; deducting fifty-six (56) grains from the one-hundred-and-twenty (120) grains of camphor used in each experiment, gives a difference of sixty-four (64) grains, which must represent the amount of camphor present in *two pints* of the officinal "Aqua Camphoræ," being of the proportion of *two grains* in each fluid-ounce of the finished preparation, or one part of camphor in two-hundred-and-forty (240) parts of water. Storer's statement that "water takes up three times as much camphor from its intimate mixture with carbonate of lime or magnesia than when shaken with camphor alone, (assuming it to be a fact that, in the latter case, but one part of camphor is taken by 1000 parts of water,) will make the limit of solubility one part of camphor to three hundred and thirty-three and one third parts of water ($333\frac{1}{3}$.) Perhaps the greater amount obtained in solution by following the directions of the U. S. Pharmacopœia, may be well explained by the preliminary trituration of the camphor with alcohol previous to its mixture with the carbonate of magnesia.

Boston, September, 1864.

ON THE AQUEOUS EXTRACT OF JALAP.

BY ALFRED B. TAYLOR.

"Does the aqueous extract prepared from jalap that has been previously exhausted by alcohol, possess any medicinal properties, or does the alcoholic extract of jalap fully represent its virtues?"

A superior quality of jalap was selected for this experiment. It was reduced to fine powder, and having been exhausted with alcohol, was treated with water; the infusion was evaporated carefully, and the resulting extract was subjected to experiment.

Thirty grains were taken by myself at 10 o'clock, A. M. At 12 o'clock, M., no action having been produced, the dose of thirty grains was repeated. At 1 o'clock the dose of thirty grains was again taken. This dose was repeated every hour until eight doses were taken; it was then discontinued, no apparent effect having been produced, and the conclusion having been arrived at, that such an extract possessed no remedial powers. It has been stated that this extract is diuretic in its properties, but I have not been able to discover diuretic, or indeed any other effects from this dose of 240 grains.

From this experiment it would appear that "Extractum Jalapæ," of the U. S. Pharmacopœia, is an unscientific preparation, being only about one-fourth as strong as "Resina Jalapæ;" the comparative yield of aqueous extract and alcoholic extract being about three of the former to one of the latter.

Philadelphia, September, 1864.

THE PHARMACEUTIST AS A MERCHANT.

BY FREDERICK STEARNS.

That which constitutes "commercial education" in relation to the pursuit of all usual forms of business, is capable of being applied to the Pharmaceutist, there being, however, special points relating to each, and those, whatever they may be, it is presumed are the ones to be touched upon in an essay upon commercial education in relation to the successful pursuit of the Pharmaceutic art.

Taking it for granted that the noviciate has acquired during his minority a fair share of the "king's English," has even graduated at a school of Pharmacy during his apprenticeship, then the following remarks may be usefully applied:

Commercial education, or the knowledge of those methods of conducting business by means of which pecuniary success, and an honorable position in community are obtained, is of course the fruit of experience only in the vast majority of instances.

The social position of the Pharmaceutist, in our country at least, is fully equal to that of those following successfully other channels of trade. Its pursuit implies a cultivated mind and scientific tastes, and as we acknowledge no aristocracy but that of mind, the necessary qualification of professional skill in our art ennobles it.

It is of primary importance that the beginner should enter upon the pursuit of Pharmacy enthusiastic, earnest, and with unbounded ambition to succeed and excel; to be in love with it, and with a firm determination to let no trivial disappointments turn him from his course.

I believe it true that the discouragements are greater to the beginner in Pharmacy as a business, than in many other pursuits, because the demand for the products of our skill is limited in comparison with that for most great staples of trade which busy the business talents of the mass of our fellow-men; moreover, a community take to a new Pharmaceutist shyly and slowly, confiding in him only as they come to know him.

Choose, then, Pharmacy as a business in the profound conviction that you were born for it, and not take it up on trial to be thrown aside for some other. Are you hopeful? So much the happier will you be, for anticipation of success is about equal to its reality.

Don't try and stand alone until you have reaped the benefit of an apprenticeship with some experienced and successful preceptor, during which you have enriched your mind by reading, study and schooling in Pharmacy, and acquired those business ways and habits which have led him, whose example you study, to success. This preliminary education is of such vital importance that the want of it can never be compensated by the slowly accumulated experience of an active life of years; I know of many young men who, after a stay of one or two years in a subordinate position in a drug store, have started in business full fledged, in their own belief, as capable and experienced Pharmaceutists; such gravitate naturally to the position in which they properly belong among merchants, remain incapable and become obscure.

We all know this *hasty* tendency is peculiar to American youth; ambitious to reach the goal of future hope it leaves the formation of correct business habits to the chance of coming years; this it is that crowds our cities and towns with so many ignorant druggists—men who pick up the business of Pharmacy as they would that of selling yankee notions, live and succeed in a small way, or fail ingloriously, in either event, blissfully ignorant of the capabilities of the art in whose borders they have tread.

After a varied experience of twenty years in Pharmacy, I am possessed of the strongest conviction that a rigid adherence to principles of integrity, to honor and to truth, in conducting our business, is most surely conducive to its success; therefore, busisiness *policy* should dictate such conduct aside from moral conviction.

We all know a thousand *tricks* in trade, the prevarication, the exaggeration and other nameless ways of making things appear as they are not, and which so often overshoot the mark, till it is a common thing for the community to allow an ample margin on almost every thing that comes from a drug store, between semblance and reality, utterance and truth. This is not as it should be; for truthfulness, in all our ways, is the best business policy, as it is most satisfactory to the conscience.

Now, supposing our beginner to be possessed with a fair education, moral, ethical and scientific, but no experience as a business man, what points are there to be observed in trade that will be most likely to lead to pecuniary success?

There are many, of small importance singly, but in the aggregate help to swell the tide that leads on to fortune.

The Pharmaceutist as a merchant *must be* industrious; the details of the business are so numerous as to tax, almost to its utmost, his endurance and patience.

When the aggregate yearly business is any considerable sum from the retail sales of medicines and accessories, the details to accomplish that require a vast number of steps and much labor of hand and brain; so it becomes a fixed fact that there is no moment, in a well organized business, that there is not some thing to do; there *are* no leisure hours.

This industry must be *personal,* too, in a proprietor, to be seconded by his assistants; this industry also implies a personal eye to all the details of a business, consequently there can be little leisure for outside occupations; better do one business well than trust to the chances of success in two or three at once, none properly conducted.

What is termed business *tact*, as it may be applied to our art, consists in knowing, as it were intuitively, how to win friends and draw customers around you.

It is shown in the proper selection of a business stand. Had I the choice between a good stand with little means to expend in fixtures, and an indifferent one with rich fixtures, I should choose the former, trusting to the future to make up the last want.

It is shown in the fittings of a store; rich without extravagance, or plain with neatness, either may be elegant. Convenience and appliances which favor the *rapid* dispatch of business, should not be overlooked as a saving of help and labor, and consequently a means of profit.

Tact is particularly shown in a courteous bearing towards customers, implying an appreciative sense of their patronage, with a self-possession and manly self-respect that is above fawning or flattering. Here it is that an intelligent understanding, or knowledge of the goods in which we deal—their history, their merits, their qualities, their peculiarities—is of such great assistance in our business in making sales. If you possess the ability (and you should possess the will) to explain to the customer, with curiosity excited, that which he seeks to know, or to impart that which you have led him to desire to know, and you do it in a self-confident yet truthful way, it is always a great point gained; that customer will always respect your intelligence; his opinions in all that relate to the art will be moulded by your own, and he will be sure to be your regular patron.

I believe in stating the merits of an article decidedly and truthfully, good goods tell no after-tales of deceit; poor ones, well puffed, most surely will.

Business tact is shown in treating your clerks as if they were friends, and so making them such. Kind words and even temper are consistent with a sufficiently rigid discipline; remember that the example by word and deed of a proprietor will produce lasting effects on the impressible characters of your young apprentices, bearing fruit in future habits and business ways.

Business tact is shown again in keeping pace with the age in which you live—to be ready with all the innovations, novelties and sensations in the medical world—experimentally, of course, at first, and, while you do not endorse such necessarily by your own approval, you should be ready to supply them.

It is shown in the careful selection of the stock of goods, particularly where means are limited, watching the demand so as to apportion it correctly, so that no overplus of some items may lessen your ability to keep a full assortment of goods.

It is shown in guiding the market yourself, not letting it guide you; strive to lead the *tastes* of your customers towards those kinds or qualities of goods which you know to be best for them, better than they themselves do. I hold this to be a duty which none of us should be indifferent to.

Business tact is shown in so individualizing your business that everywhere possible the articles sold by you should represent *you*, not some one else; make everything yourself that it is at all practicable for you to make, and if your skill is such that whatever you make represents the best of like articles, then each item of such sold is a standing advertisement for you to win additional trade. I am a firm advocate of the practice of each Pharmacy being a producing one; it is no credit to a man, who has been well educated in this art, to be contented to live along and sell only the products of others industry, when he might better make his own, increasing his business and reaping the additional portion of profit thereby.

Business tact so displays goods as to make the most of them, so in a measure to help them sell themselves; therein neatness and taste go hand in hand with industry.

While business tact will lead the merchant, desiring success, to deal in all the articles of his line that the public calls for, there are in ours very many things that, which to do, is more or less to compromise with the right and wink at the wrong;—the alcoholic stimulants under the guise of medicated bitters—the regulating remedies, so advertised as to furnish a ready means for criminal purposes—add to these almost the whole list of the so-called patent medicines; all these the intelligent Pharmaceutist knows are pernicious in their effects upon the public health, and yet how feeble are his efforts to retard their sale, how weak his protest against their use. If you do deal in such, be independent enough to make the sales of them depend upon the natural law of *demand* and *not* on your efforts; do not, above all things, ever endorse them with breath of praise.

About advertising, that is also a legitimate means of making yourself known, but how best to do it to reap the largest returns for the smallest proportionate outlay is an art in itself, and one that each must learn by himself.

After all said about business tact, business success will be dependant upon keeping and selling those quality of goods, in every department of your trade, that are intrinsically good, and he who takes, in that respect, the highest stand will reap the greatest reward.

The greatest *reward* lies not only in money gains, but in reaching that honorable position in community wherein you are looked upon as a public benefactor, in seeking honest profits and not being a Shylock. It gladdens me to remember professional friends who are poor, perhaps, in pocket, but rich in possessing the respect and affection of their neighbors, while my mind's eye rests on an occasional one who is poor in everything that can make a man *poor*.

The economical administration of business affairs will commend itself to all who mean to win success, and, while a commendable share of enterprise is to be advised, a proper mixture of caution is quite as valuable.

Men of scientific tastes are not apt to be good financiers; such tastes render them careless of money; they rarely understand economy in business, and in business they trust their finances to others not vitally interested. The Pharmaceutist should know at all times how he stands in credit and purse; "cutting your coat according to your cloth," and a host of similar commercial maxims commend themselves forcibly to his attention.

Great is the field for the inventive faculties to play in pursuit of Pharmacy—devising improvements in formulæ, shortening methods, improving apparatus, introducing new, unique and original designs in labels, bottles and various similar things. Don't be a mere copyist of others, but add something, during a lifetime, to the sum total of taste and improvement.

It is surprising how the little elegancies, and nice nothings, aid the business of the prosperous and enterprising Pharmaceutist.

Professional men are not given to business promptness; don't let the title of *professional*, which is attached to our art, lead to any such careless habit as a want of promptness in fulfilling any and every promise to do or promise to pay.

So varying and peculiar are the auspices under which each young man enters business, that it is not likely that the foregoing covers all the ground designed for a reply to the query I accepted; these several points, however, may, if acted upon, be conducive to a proper estimate in the minds of some of the right paths to follow in acquiring a commercial education.

Detroit, Mich. Sept., 1864.

ON THE SWEET GUM TREE—(*LIQUIDAMBAR STYRACIFLUA, L.*)

BY WILLIAM PROCTER, JR.

The query which should have been answered by this paper is about as follows:—"It being now known that liquid storax is a product of Liquidambar Orientale of the Levant, will the Liquidambar Styraciflua of the United States yield a product analogous to commercial storax, if it be treated in the same manner."

It had been the expectation of the writer to be able to give a satisfactory answer to this query, but his hopes have been defeated by circumstances beyond control. Early after the adjournment of the meeting of 1863, measures were taken to have certain experiments made on the sweet gum tree, as it occurs in Louisiana, by a gentleman occupying a prominent position in the pharmaceutical department of the army at New Orleans, and who kindly agreed to make them when the proper season should arrive. A second letter fully corroborated this intention, but as he failed to effect it, at least in time to reach me before leaving Philadelphia, I presume his duties have interfered with its accomplishment. Meanwhile inquiry and personal observation have convinced me, that we need not go to the extreme South to find sweet gum trees fit for the experiment. In the latitude of Cincinnati and Louisville abundance of such are to be found, and in New Jersey, near Mt. Holly, trees exist more than three feet in diameter, and which, when wounded in warm weather, yield the balsamic resin, known as "sweet gum," but the product is small. No instance was observed of the resin issuing spontaneously, without a wound of the bark, accidental or designed; yet in Tennessee, Arkansas and Kentucky, it is found as a spontaneous exudation. The season proper for trying the experiment of the query having passed before it became apparent that I should not receive results from New Orleans, it was out of my power to try the experiment at home. Feeling convinced that much interest will be derived from a solution of the question, I ask the Asssociation to continue the subject in my care, under the new title of

"The Sweet Gum Tree, (Liquidambar styraciflua) and its products," promising the endeavor to report fully next year, on the subject of the query, and other points of interest in connection with this species of Liquidambar.

ON TOBACCO.

BY FERDINAND F. MAYER, OF NEW YORK.

QUERY 11th.—Is nicotina the active principle in carefully dried green tobacco leaves? Do the seeds of tobacco contain the same alkaloid? and if so, does the proportion of nicotina in commercial tobacco justify the belief of Liebig (*Agricultural Chemistry*, Amer. ed., p. 184,) that it is an artificial product?

Numerous as have been the essays published both on the chemical and the therapeutical relations of *Nicotiana Tabacum* and its narcotic principle, they refer for the greater part to the leaf of the usual brown color and well-known irritating ammoniacal odor, which is the form officinal in all Pharmacopœias; for, though universally cultivated, the plant is never prepared specially for application in medicine like other narcotics, partly because of the commercial article being still more readily obtainable, but, in yet greater measure, because the fresh and the dried green leaves have very generally been considered, if not devoid, to be at least of very feebly developed medicinal virtues. Only those of another species, *N. rustica*, are occasionally used fresh as an external application, and are, or were formerly, officinal in some European Pharmacopœias.

There is so striking a difference in many of the outer properties of the officinal plant, in the green and the cured condition, as to offer in itself some grounds, for what was formerly universally and is even now very generally believed, that the volatile alkaloid on which the activity of brown tobacco is supposed to depend was not present as such in the living plant, but that it is a posthumous product formed entirely or partly during that incomplete fermentation which it undergoes in the hands of the cultivator, the "*bulking*" of tobacco. For, the fresh plant possesses none of the peculiar heavy odor of the other narcotics. Nor is the dried leaf much more pungent than a common herb. Its infusion, like the fresh juice, has an acid reaction, and contains no ammonia. Its color is pale green, with here and there some brownish patches; but the taste is decidedly acrid, and certainly only differs from that of the commercial article by the absence of free ammonia. It also contains a large proportion of nicotina in combination.

This had been pointed out as early as 1809 by Vauquelin, in the report made by him with Robiquet and U. S. Consul Warden. It was again shown to be present by Posselt and Reimann, in 1831, in plants of several species grown near Heidelberg, and again in 1836 by Henry and Boutron-Charlard; and in 1831 A. Buchner, sr., prepared some nicotina from the seeds. Lastly, our excellent Procter, in the answer to very nearly the same questions as those at the head of this paper, read before the meeting of 1858, proved without doubt the presence of the alkaloid at least in the fresh leaves; and the authority on whose credit the origin by fermentation had been maintained, as quoted in the query, corrected the statement made there as early as 1844, upon the occasion of a paper on Tobacco-smoke by A. Melsens, in a note to which (*Annalen der Chemie und Pharmacie, vol.* 49, *p.* 359) Liebig mentions that "at the Giessen Laboratory not inconsiderable quantities of the alkaloid had been obtained from the fresh plant."

With such evidence the presence of nicotina in the plant, through its various stages, may be accepted as satisfactorily proved. Yet Mr. Procter suggested that the matter, especially in regard to the seed, be again made the subject of research, and since this investigation has been undertaken by me, fresh interest has been imparted to it by the publication of a paper on the same subject in the *Vierteljahresschrift für Pharmacie* of April last. The author of this essay found a volatile principle, which on the strength of its odor he assumes to be trimethylina (pseudo-propylamin,) said to have originated from a fermentable substance contained in the seed, and he believes that Buchner mistook a mixture of ammonia and trimethylina for nicotina.

In order to avoid, if possible, errors arising from reliance upon such deceptive characteristics as odor, and because in the examination of the plant at least two bases are met with possessing a pungent and somewhat similar odor, I have made use, besides the usual distinction resting on the percentages of platinum in the double salts of the volatile bases, of the following table founded on previous and new observations of Nessler, Winckler, Procter, myself and others:

PRINCIPAL REACTIONS OF THE MEDICINAL VOLATILE BASES.

(*w.* = watery solution, *s.* = salts, or acid solutions.)

REAGENTS ADDED TO	AMMONIA.	TRIMETHYLINA.	ANILINA.	NICOTINA.	CONIA.	LOBELINA.
Iodine in Iodide of Potassium.	*w.* Decolorised. *s.* no change.	*w.* & *s.* Orange colored precipitate.	Brown solution, afterwards a precipitate, or none.	*w.* and *s.* Brownish-red precipitate.	*w.* & *s.* pale brownish red precipitate.	*w.* and *s.* Brownish-red precipitate.
Tannic Acid	*w.* No precipitate. *s.* Precipitate of tannin if concentrated.	Neutral & alkaline solutions; white curdy precipitate.	No precipitate.	Whitish precipitate, soluble in acids.	White precipitate, soluble in tannic and other acids.	White precipitate, soluble in tannin and ammonia.
Chloride of Mercury	*w.* White precipitate.	*w.* White precipitate.	No precipitate.	*w.* White precipitate.	*w.* White precipitate.	*w.* No precipitate.
Iodohydrargyrate of Potassium	*s.* No precipitate; with caustic KO orange to brown precipitate. *w.* White to yellow precipitate, soluble in excess.	*s.* A loose mass of pale yellow crystals, very soluble in excess of iodide of potassium, and caustic KO; decomposed by shaking with water. *w.* Precipitate which re-dissolves in excess	*w.* Solution: white precipitate, soluble in excess and in KI, reproduced by KO, but redissolved by excess of the same.	*w.* and *s.* Yellowish precipitate, somewhat soluble in excess of reagent, and readily soluble in caustic KO.	*w.* & *s.* same as nicotina.	*w.* and *s.* Pale yellow precipitate, little soluble in excess of reagent or of caustic KO.
*Acetate of Lead.**	—	—		—	—	—
Nitrate of Silver	*w.* Brownish-black.	*w.* Grayish, soluble in nitric acid.	No precipitate.	*w.* At first no precipitate. but a brownish-black one on heating.	*w.* White precipitate, turning brownish, soluble in ammonia, at first also in nitric acid.	*w.* White precipitate, soluble in ammonia and nitric acid
Chloride of Gold	*w.* Reddish-yellow precipitate.	*w.* Grayish yellow, insoluble in hydrochloric acid.	*w.* No precipitate.	*w.* Yellowish, curdy. insoluble in HCl.	*w.* Whitish, insoluble in HCl.	*w.* Pale yellow, insoluble in HCl.
Chloride of Platinum†	—	—	—		—	—
Density and Solubility	Very soluble; mixes with water.	Very soluble; mixes.	Scarcely soluble; floats	Little soluble; sinks.	Little soluble; floats.	Little soluble; floats.

* In the watery solution, except of *anilina*, a white precipitate.

† Distinct precipitate only from *nicotina*, which dissolves on heating.

Course of Proceeding.—The volatile alkaline substance having been obtained in form of a concentrated solution in water, and in part as solution in hydrochloric acid, a drop of a solution of iodide of potassium saturated with iodide of mercury is added to part of the acidulated solution. Either,

I. *It produces no precipitate.*—Absence of trimethylina, nicotina, lobelina, conia. To a portion of the unchanged solution add caustic potassa in slight excess, which causes a precipitate. It is

Whitish and pulverulent: *anilina.*

Reddish to brown and flocculent: *ammonia.*

II. *A precipitate is produced.*—Add excess of the solution of mercury.

1. The precipitate re-dissolves very readily: *trimethylina.*
2. The precipitate is scarcely soluble in excess of mercury, but readily, while fresh, in caustic potassa: *nicotina, conia.* Apply the specific tests.
3. The precipitate is scarcely soluble in either: *lobelina.*

NOTE.—*Ammonia.*—Its reactions, as for instance that with cobalt, are rendered indistinct by the presence of carbonic acid.

Commercial *trimethylina* (the medicinal propylamin) is probably never free from ammonia, which is readily ascertained in an acid solution by the test with iodohydrargyrate and caustic potassa. It should be perfectly colorless and clear, of a faint odor of ergot rather than of herring, and must burn like alcohol.

Conia, when quite pure, is colorless, and has a peculiarly sweet but rancid or somewhat musty odor. *Lobelina* resembles it in many respects; has an herbaceous odor, recalling that of prussic acid.

The alkaloids tested were freshly prepared for the experiments by the method described further on for nicotina.

EXAMINATION OF TOBACCO.

The material engaged for the experiments with fresh tobacco, —a dozen plants in full growth, collected after "topping" the buds,—unfortunately, by some delay in delivering, reached me in so damaged a condition as to reduce very considerably the extent of my investigations.

Of the uninjured leaves, with their petioles and ribs, 25 troy ounces were spread out to dry until their weight had been reduced to 1625 grains,—a loss of 86·5 p. c., though they were not yet perfectly air-dry.

Of this weight, only 245 grains had remained green throughout, or showed scarcely any decolorization. The remainder had become more or less brown, on the upper surface principally, scarcely on the lower. They possessed a simply herbaceous odor, no pungency like that of ammonia, or commercial leaf, but a decidedly acrid taste.

One hundred and seventy-one grains of the green leaves were exhausted with boiling alcohol,—dilute alcohol acidulated with hydrochloric acid,—and the alcohol removed from the tincture by distillation. The residue indicated, when tested with tenth normal solution of iodohydrargyrate of potassa, (one cubic centimetre = 0·00405 of a gramme = 0·0625 of a grain of nicotina,) 2·345 grains of the alkaloid in 171 grains. 1·36 p. c. of the dry leaf = 0·1836 p. c. in the fresh.

Six hundred and sixty grains of the leaves which had become somewhat tainted were treated in precisely the same manner. They indicated, within a mere fraction of 9·37 grains of alkaloid, = 1·42 per cent. in the dry, = 0·1917 per cent. in the fresh state.

Of the fresh leaves, the juice of which was of a very decided acid reaction, 28·5 troyounces had, at the same time, been placed in digestion at a moderate temperature for several days, with water acidulated with sulphuric acid. The 3700 cc. of liquor, resulting, contained, according to assay, 28.87 grains of nicotina, equal to 0·21 per cent. in the fresh state.

Ten troyounces of the same were macerated in the same manner; the resulting liquor, however, evaporated in a porcelain dish to the consistence of soft extract, and after redissolving tested with iodohydrargyrate; this indicated 4·75 grains; only 0·1 per cent. were still present.

Commercial tobacco, known as Connecticut seed-leaf, and reported to be of the same variety and neighborhood as the fresh plants under examination, presented the usual properties of good tobacco. Its simple watery infusion was decidedly alkaline. Hydrogen gas and still more air at a slightly elevated temperature passed over the tobacco contained in a long tube, carried off very noticeable quantities of nicotina and ammonia. On distilling it with water, the vapors carried over nicotina, ammonia and its carbonate, and it was observed that the whole of the nicotina contained in a watery infusion could be evolved by boiling, or distilling it with a large excess of caustic ammonia.

As the result of several assays with two troyounces at each time, I obtained as mean proportion of nicotina 13·25 grains, equal to 1·36 per cent. of the leaf, precisely the percentage in the first assay as given above.

Tobacco seed of the same variety possesses scarcely any acridity, except what arises from rancidity of the oil. The latter is at times extracted as from other seeds, and employed for household use. Decoction with acidulated water was found to be the best mode for their extraction.

Three troyounces, thoroughly bruised, were boiled for several hours with water and a little sulphuric acid. The filtered liquor indicated, with iodohydrargyrate, 6·46 grains of nicotina = 0·45 per cent. of the seed.

The leafstalks and ribs of the commercial leaf, and the liber of the green stalk, yielded noticeable quantities of the alkaloid, but their percentage was not determined.

For the purpose of identifying the alkaloid, or bases carried down by iodide of mercury from acidulated solutions in these several instances, the precipitates were washed with water—(since the test solution of iodohydrargyrate, besides containing a large excess of iodide of potassium, is too dilute to allow any trimethylina to be precipitated, no attention needed to be paid to any possible decomposition of the precipitate); it was then rubbed smooth in a mortar with a concentrated solution of protochloride of tin, to which were afterwards added small pieces of caustic potassa, so as to form an alkaline solution of protoxyd of tin. The result in this as well as in the case of all other bases, when their compounds with mercury are similarly treated, is that the mercury is reduced to the metallic state, its iodine or chlorine combining with the tin; the hydriodate of the base, then disengaged, is acted on by the excess of caustic alkali, and the base, when the mixture is now agitated with ether, is at once taken up in an almost pure condition.

After distilling off the ether, the residue is dissolved in dilute hydrochloric or oxalic acid, filtered, again shaken with alkali and ether or chloroform, which will then give a pure solution of the base, provided no lengthy evaporation has been made use of, in preparing the liquors for precipitation with mercury.

The ethereal solution obtained in this manner from precipitates of nicotina at first leaves the alkaloid as a pale, yellowish, oily liquid, surrounded by a greenish brown soft resin or impure wax, which, next to ammonia, is the cause of the pungent odor of tobacco. To a certain extent it is a product of the oxidation of the alkaloid, but when repeatedly dissolved in alcohol it is odorless and tasteless, and contains no nitrogen.

Pure nicotina obtained from the second or third solution in ether is colorless, has no odor at first, but acquires the pungency and odor of tobacco after some hours' exposure to the air, or on being heated. It agrees in most respects with the description given by Henry and Boutron-Charlard. Half a drop of it instantly killed a full-grown pigeon.

The liquids from which the precipitate of nicotina with mercury had been obtained, and which contained an excess of iodide, were, after filtering, rendered alkaline by the addition of caustic potassa. This causes a decided precipitate only in the case of commercial tobacco; the solutions from the dried leaves, in both the above experiments, gave a faint cloudiness. The filtrate from the seeds did not even show a trace of what would have indicated the presence of ammonia.

The precipitate produced in the first case was decomposed by alkali and protoxyd of tin, and then distilled; the distillate was converted into a platinum salt, which had all the properties of that of ammonia.

Having become satisfied, by my preliminary examination, that no stronger alkali than ammonia was required to expel nicotina as well as trimethylina, parts of the solutions to which no mercury had been added were severally distilled with caustic ammonia.

In the case of the acid infusion of fresh tobacco, no bases besides ammonia (from the retort) and nicotina were to be found in the gases and the liquids which came over and were received in hydrochloric acid. Evaporated to dryness, and tested for trimethylina, no traces of it could be discovered by the reactions described above, nor any particular resemblance in the odor; nor could any inflammable gas be extracted from the residual chlorides on heating with caustic potassa or baryta.

With an infusion of commercial tobacco, a great part of the nicotina comes over without the addition of an alkali, and nearly the whole quantity is obtained by adding a considerable excess of ammonia. This form is likewise free from trimethylina.

There is no perceptible difference in this respect between a decoction of the seed, and one of the fresh plant. The distillate contains only ammonia [intentionally] and nicotina.

From the watery distillate of ordinary tobacco, which had a milky appearance, but gave no deposit, and contained both ammonia and nicotina in solution, after acidulating with sulphuric acid, ether extracted a small quantity of a substance, which I believe to be identical with the soft resin described before.

Though the experiments delineated so far are evidently yet incomplete, they still serve to answer the questions proposed as completely as was possible at this season of the year.

The conclusions which I beg to submit are—

1. That nicotina is the active principle in all parts of the plant before and after curing.

2. That there is in all probability no increase, but rather a loss of nicotina during the drying and curing, partly or wholly caused by volatilization; and

3. That the plant or its parts contain no trimethylina, nor any ammonia while fresh.

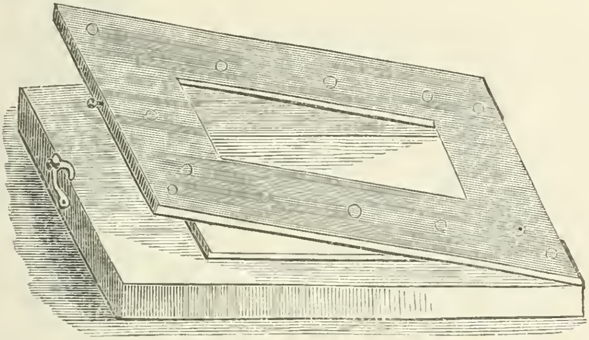
PREPARATION AND DISPENSING OF PLASTERS.

BY WILLIAM C. BAKES.

"What is the best arrangement for spreading plasters of uniform sizes, rapidly and well, and what is the best form and weight of spatula for spreading plasters extemporaneously? together with observations on the dispensing of this form of preparations."

Among the many preparations demanded of the Pharmaceutist, there are few requiring greater nicety of manipulation than the spreading of plasters. Unfortunately, in these days of "machine-spread plasters" less attention is paid to this department, and hence a lack of proficiency in their preparation, which is oftentimes mortifying to the pharmaceutist, and even worse to the patient obliged to wear a badly spread plaster.

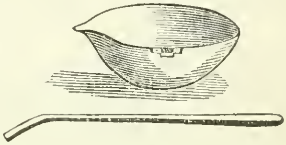
Various forms of apparatus have been suggested, but that which seems the simplest and best adapted to the purpose consists of a frame made of oak, or some hard wood, covered with sheet iron or steel, projecting about three-fourths of an inch on each side. This is secured by hinges to a back, the centre of which is raised to admit the frame, under which the kid or other material is stretched; the frame being closed down, is secured by a hasp, and everything is now ready to receive the melted plaster.



These apparatus are inexpensive, and can be made of various sizes, calculated to spread plasters of any given dimensions, and intermediate sizes can be spread on the same machines by laying strips of tin or paper underneath the frame, according to the required length or breadth.

A very suitable pattern for breast plasters, suggested by Prof. Parrish, is described on page 781 of his Treatise on Practical Pharmacy.

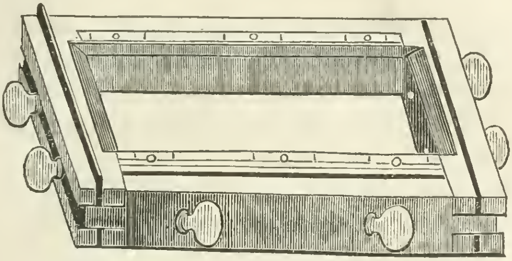
There are many objections to the old plan of melting the plaster with the heat of the plaster iron, and the process, unless conducted by an adept in the art, is apt to be a failure. The simplest, and, I think, most economical arrangement, is to melt the plaster in a suitable vessel, and when of the proper consistence, spread it with an ordinary spatula of convenient size. To many, the use of the spatula in this connection may seem awkward, but, after a thorough trial, experience will prove its availability and perfect adaptation to the purpose. The melted plaster should be thrown on the surface to be spread, and, with one or two sweeps of the spatula, the operation is accomplished, and the result will be, if performed with even ordinary skill, an evenly covered plaster, and without the shades of color often seen when a plaster iron is employed.



The pharmaceutist will find it very convenient to have a series of capsules, made of either copper or sheet iron, of different capacities, in which to melt plasters, which should always be done over a water bath. Each capsule should have a lip to pour from, and a clamp at the side, (as shown in the drawing,) in which a handle can be fitted. By this means they are made to occupy less room, and one handle serves for the entire set. The dispensing of plasters is a subject which should receive more attention than has heretofore been bestowed upon it. In these days of "Æsthetical pharmacy" it is not in good taste to hand a customer a freshly spread plaster between two layers of paper, large and unwieldy enough to require both hands to carry it, or, if the plaster is firm enough, to dispense it rolled up loosely; this has a careless and untidy appearance, not at all in keeping with the other "elegancies" of a well-ordered establishment. Now that we have our pill-, powder-, and suppository-boxes, we should also have a plaster-box. These can be neatly made of white pasteboard, about $\frac{5}{8}$ of an inch deep, and, when made of the following sizes, will be found to meet the requirements of ordinary demands: 7×9, 5×7, 4×4. For breast plasters a circular box should be used; these might be made about $9\frac{1}{2}$ inches in diameter.

In this connection I would mention a very ingenious arrangement gotten up, at the suggestion of Mr. John M. Maisch, by Mr. A. H. Wirz, of this city, for use at the United States Laboratory. It consists of a movable frame, operated by screws at the side and ends, with numerous sharp points along each side, for stretching silk in the preparation of isinglass- or court-plaster.

These stretchers may be made of any size, and will be found well adapted to the purposes for which they are intended.



APPARATUS FOR SPREADING ISINGLASS PLASTER.

The pharmaceutists of Europe have recently introduced gelatine paper as a vehicle for the application of powerful remedial agents. The calabarized gelatine paper and atropine gelatine paper have already been introduced into this country, and used with success in the treatment of ophthalmic affections. The mode of application is peculiar: a piece of the gelatine paper, about one-fifth of an inch square, adhering to the tip of the fore-finger (damped), is placed on the sclerotic conjunctiva, below the cornea, whilst the lower lid is depressed and the patient is looking upwards. The lids should then be closed, and in a very few minutes the gelatine is dissolved in the tears, and the effect follows in due course.

The calabar, (for contracting the pupil,) and the atropine gelatine paper, (for dilating the pupil,) are dispensed in sheets one inch wide and two inches long, which are folded as the leaves of a book, and covered with a back of thick paper.

This portable and convenient form is capable of being carried by the physician in his pocket book, and always ready for use as occasion may require.

A piece of the atropine gelatine paper, one-fifth of an inch square, contains as much of the sulphate of atropia as a drop of the solution of two grains to an ounce of water.

These gelatine papers may be made by dissolving pure gelatine in sufficient water holding the active ingredients in solution, to form a consistent mass on cooling. It is then poured whilst hot upon the surface of a warm sheet of plate glass, slightly oiled, and surrounded with a border of thin card paper, laid flat. A similar plate, also warmed and oiled, is next laid upon the gelatine, and the two plates pressed into as close contact as is permitted by the card paper. When quite cold the thin sheet of gelatine is removed and cut into convenient pieces. Other active principles may be combined with gelatine, and applied on the same principle to other parts of the body.

Philadelphia, Sept., 1864.

BITTER WINE OF IRON.

BY JAMES T. SHINN.

Preparations of bitter tonics in wine, and of iron in the same menstruum, have been in use for many generations, and various formulas for making them are to be found in old medical works. In "The Complete English Dispensatory," published in 1730, by John Quincy, M. D., quite a number are given for Vinum Ferri, Vinum Chalybeatum, Vinum Amarum, &c., but none combining the iron and bitters, though in some remarks on the medical properties of wine of steel, it is stated to be very efficacious when given with the stomachic bitters; it is also recommended to be mixed with wine of vipers, thereby increasing the effect, if not improving the taste, but this latter article is now scarcely to be found, save in some antiquated apothecary's shop window, and the human race is sufficiently tinctured with the old serpent without resorting to such an infusion.

Early in this century, Dr. Physick, of Philadelphia, prescribed a bitter wine of iron by macerating iron filings, gentian, orange peel and ginger in old cider, which, though containing but little iron in solution, was considerably used by the profession, and kept its popularity until within a few years; the tannin in the orange peel caused it to become quite dark in color, which detracted from its elegance as a preparation.

In 1841 M. Beral published some notices of various preparations of iron, including citrate of sesquioxide and of the magnetic oxide, and of one called chalybeate wine of quinquina, of which he says, "Composed of elements which were supposed incompatible, this chalybeate wine constitutes a new medicine, the necessity of which is frequently seen, and which, in the hands of physicians, receives numerous useful applications. Fifty grammes of this wine contain one gramme citrate of iron, and the soluble principles of three grammes of quinquina; the quantity may be increased at pleasure."

The introduction into this city of a preparation combining the properties of cinchona and iron with wine, appears to be due to Peter J. Hassard, who, about five years ago, was requested by Dr. J. F. Meigs to make such an article; he, being familiar with the extensive use made by empirics of citrate of iron and quinine, prepared the bitter wine of iron by dissolving that salt in sherry wine, adding sugar and orange as flavor.

In the American Journal of Pharmacy for 1861, there was published a formula for "Hubbell's bitter wine of Iron," made with an extract of bark and citrate of the magnetic oxide of iron. ("This oxide does not form salts." Fowne.) As is remarked by Prof. Procter, only the salts of cinchona bark are contained in this preparation, and it would be equally effective and much more convenient for the apothecary to make it from the sulphates of quinia and cinchonia, which are always in his shop.

Upon inquiry among several of the leading pharmaceutists of Philadelphia, I find much difference exists as to the mode of making "Vinum Ferri Amarum." Some only sell the old article of Dr. Physick; others use ordinary extract of cinchona bark and citrate of iron, adding citric acid to prevent blackening, or treating the solution of extract with carbonate of iron, and filtering out the tannate; while many dissolve the citrate of iron and quinine in wine. This latter salt, as found in commerce, is of uncertain strength, and objectionable on that account.

The points to be considered in devising a formula for bitter wine of iron are, efficacy, agreeability of taste and appearance, economy and convenience of preparation.

The salts of the cinchonas rank highest among the tonics, and the sulphate of cinchonia is considered by many physicians quite as effective as the sulphate of quinia: in the Philadelphia Dispensary it is used altogether as a tonic and anti-periodic with complete success; and Dr. John Conrad, of the Pennsylvania Hospital, who has had extensive experience in regard to it, thinks it equally certain, when given in rather larger doses than the quinia. This being the case, economy would point to its introduction into the preparation under consideration, while the facility of manipulation with the salts instead of ext. of bark. and the elegance of appearance in the result, are additional reasons.

The following is a recipe by which I have made the article for a long time with satisfactory results, and combines to some extent the desirable points enumerated above:

Take of sulphate of cinchonia,	ʒvj.
“ “ quinia,	ʒij.
citrate of iron,	℥iv.
citric acid,	℥j.
sherry wine,	Oiv.
alcohol,	Oj.
orange syrup,	Oj.

Dissolve the sulphates and citric acid in a pint and a half of hot water, and the citrate of iron in half a pint of the same; mix the solutions, and add the other ingredients.

This contains about half a grain of the cinchona salts and two grains citrate of iron in each teaspoonful, and is much stronger in tonic power than most of the articles made by other apothecaries, and consequently is not quite so pleasant to the taste. It must be impossible to give cinchona or its salts in sufficient doses to be effectual without a decided bitterness, or at least no soluble preparation is now known that is free from such taste. The pharmaceutist who can show the physician a capital formula, and at the same time please the patient with an agreeable and attractive-looking medicine, is the one to succeed, but the two things are often incompatible with a strict observance of said formula.

The materials above given are on the shelves of every apothecary, and may be put together in fifteen minutes, forming an agreeable remedy of pleasing appearance and tonic power. The proportions may be varied, and sherry wine used instead of part water, as also the officinal solution of citrate of iron, being careful to heat it before mixing with the other salts; but the formula as given fulfils, as near as may be, the conditions before mentioned of efficacy, agreeability, economy and convenience of preparation.

Philadelphia, 1864.

GLYCERIN—ITS MISSION (SO TO SPEAK) AS A REMEDY, AS AN ADJUVANT AND AS A SOLVENT.

BY W. J. M. GORDON, CINCINNATI.

When I accepted this subject at the last meeting of the Association, I expected to have given it more attention than my time during the past year would permit. Not having investigated it as thoroughly as desirable, I will present what I have accomplished in connection with much that is not new, so as to present it as fully as possible, and leave it for the experiments and suggestions of all who may be interested in it.

Glycerin, it is generally known, possesses a wonderful range of solvent properties, dissolving many substances not soluble in alcohol or water. Its agreeable taste, harmless action upon the system and perfect assimilation with human digestion, specially adapt it when other substances would be rejected. Its sweetening property being almost equal to cane-sugar syrup, but differing from it in not being liable to fermentation; resembling oils, but, unlike oils, miscible with alcohol and water in any proportion; not volatile at ordinary temperatures, and not becoming hard at the freezing point of mercury. Possessing these properties, it cannot but be an article of importance both in pharmacy and in the arts.

The high price, heretofore, no doubt, has kept it from many uses to which it is now applied. Recently, glycerin, adapted to the various purposes to which it is extensively used, has been produced at a lower price than alcohol, sugar, or oil, which it has come in competition with, and which places it seems specially adapted to fill to a considerable extent; and the large amount and low price at which it can be produced, makes it worthy of attention at a time particularly when every article of utility should be carefully looked after.

Medicinally, glycerin has been used for its nutritive and alterative effect, and in some cases with marked success, being admissible when cod-liver oil and other unpleasant substances would be rejected. These and its soothing effect in coughs, are the principal internal uses to which it has been applied alone. Its more important medicinal value is as a vehicle for the preparation of a great variety of remedies for both internal and external use.

It is a favorite article in combination with the hypophosphites, known as glycerole of hypophosphites, and never disagreeing with the most delicate stomach, as sugar is liable to do, is admissible when syrup is not.

Iodide of iron prepared with it in the place of syrup, makes a handsome and permanent preparation.

Its preservative and solvent property being so much greater than that of sugar syrup, cannot fail to recommend it in the place of that substance for the preparation of ipecac, senega, hive syrup and such vegetable preparations as are liable to fermentation, specimens of several I now exhibit made with glycerin, costing $2 00 per gallon, which are elegant in appearance, and will undoubtedly remain without change an indefinite length of time.

Its uses externally are numerous. For chapped skin and rough and excoriated surfaces, it has no equal; for sore nipples, skin diseases, ulcers of various kinds, to prevent excessive suppuration and cleanse the secreting surface.

It is highly recommended in deep abscesses with diseased bone, combined with iodine, which it dissolves. With many, it is a favorite mode of applying iodine and its salts.

It is used in cerates and ointments, which do not become rancid so soon when combined with it; as glycerole of lead, in place of Goulard's cerate, glycerin being used in the place of wax and oil; as glycerole of kino, which is said to be unchangeable; in the preparation of lactucarium in a liquid form, by which its activity and reliability are more certain; as glycerole of aloes, tar and arnica for external use. It is used with starch in the proportion of 1 oz. of glycerin to 70 grs. of starch for making an article called "plasma," as a substitute for lard or cerate. And it no doubt possesses advantage in preparing vegetable extracts, such as belladonna, aconite and others for external use, as they can be readily mixed with it; for liniments, in the place of oil, as it will not become rancid; and has been suggested for the extraction of the active principles of vegetable substances in place of oil and fats, to be used in the preparation of cerates or ointments.

Incorporated with vegetable extracts, it will prevent mouldiness and keep them soft, and for pill mass liable to become hard it is a good addition. It may be used as an addition to poultices to keep them soft, or any article to be kept in a moist or plastic condition.

Its solvent and preservative properties are of great importance to the pharmaceutist. In the preparation of fluid extracts, it will be found to supply the place of alcohol and sugar to much advantage. My experience is such as to convince me that in most cases extracts will be more permanent by supplying the place of alcohol used to preserve them with glycerine. To fluid extract of Jalap, Veratrum viride, Cinchona aromat. and Iris versicolor, glycerin was added and all the alcohol evaporated out, specimens of which I now exhibit, presenting a handsome appearance. Sarsaparilla and those liable to fermentation will be much better preserved with it.

I have used glycerin as a menstruum in the preparation of extracts of cloves, nutmegs and Ceylon cinnamon, and the preparations are elegant representatives of the substances from which they were made.

It dissolves the vegetable acids, most of the vegetable alkaloids, sulphuret of potassium, permanganate of potassa, sulphate of copper, zinc, iron and potassa, alkaline and some of the metallic chlorides;

Iodide of ammonium, cadmium, zinc, potassa, sodium, lime and manganese;

Freshly precipitated carbonate of iron;

Most of the metallic oxides to some extent;

Nitrate of potassa, silver, copper, and lead;

Citrate of iron, citrate of iron and quinine, citrate of iron and strychnia, tartrate of iron and potassa;

Pyrophosphate of iron, and most saline substances.

Heating to give it greater fluidity will generally increase its solvent property.

It may not be amiss to name other purposes for which glycerine is largely used. Much the largest quantity used for any one purpose, except that of filling gas meters, is in the manufacture of hair oils, tonics and washes, for which it is admirably fitted, taking the place of alcohol and castor oil, which are now too expensive for the purpose, and by its undrying property keeping the hair moist in appearance.

It is largely used in tobacco, and is particularly adapted to the article known as fine-cut, preserving it in a moist state an indefinite length of time; and, unlike sugar, molasses and infusion of liquorice, which has been used for the same purpose, it will not turn sour, and is unchanged by exposure to the air

Wine and liquor manufacturers use it to improve liquors, by giving body and removing the fiery taste.

It is used by manufacturers of woollen goods in place of oil, being more economical and not requiring soap to wash it out.

Manufacturers of cotton goods use it in size to prevent rapid drying.

Printers use it in place of molasses to make rollers, which will not dry and shrink.

It is used by artists in clay and plaster of Paris, to preserve it in a plastic form for modelling.

It is used in soaps.

For filling wet meters, used in measuring illuminating gas, it is now extensively used, and possesses decided advantage over whisky or any substance before used for the purpose. It is practically free from any objection, not evaporating at any ordinary temperature, and can be sufficiently diluted to prevent its absorption of more water from the gas, and not liable to freeze at any degree of cold meters are subject to, and rendering them free from the attention necessary if filled with whisky or water.

It deserves attention as a lubricator for fine machinery, not congealing or being affected by exposure to the atmosphere.

Numerous other applications have been made of it, and its uses will increase as its wonderful properties become known.

ON SPATULAS, STIRRING-RODS, ETC.

BY THOMAS S. WIEGAND.

"Spatulas, stirring-rods, agitators, and mechanical stirrers used in pharmaceutical preparations; their material and quality, form and construction: with critical remarks."

In reporting upon this question it will be most conducive to a thorough investigation to consider the uses to which these various implements are applied, so that the fitness of each kind for the purpose designed may be apparent to those who may need them.

1st. The principal use to which spatulas are applied is doubtless the dispensing of extracts, ointments, cerates, &c., either simple, this is, ready made, or compound, such as are to be prepared at the time demanded.

2d. In compounding prescriptions of pills.

3d. In manipulating with powdered substances.

The kind of duty required of spatulas in dispensing articles belonging to the class first mentioned is so various that a great deal of difference must exist in the blades suitable for these various matters. Generally a blade of good temper, firm, and yet not so stiff as to be entirely unyielding, is required; many ointments, such as cold cream, can be dispensed with either a stiff or very pliant blade, as convenience may determine. When soft ointments are to be mixed in a mortar with other matters a pliable knife is the only one that can be used with advantage; with it an expert operator can remove all the adhering ointment quite thoroughly.

A different knife, however, is required when ceratum resinæ comp., ungt. hydrargyri, and many others, especially in cold weather, are to be dispensed. A blade of very considerable stiffness, not destitute of all elasticity, however, is required for such purposes.

The knives are best made of steel, and the handles of cocoa-wood are most in vogue. The manner in which the handles are secured is a matter of considerable importance; the most common, but very faulty method, is to cement the tang into the handle, which has been bored or burnt to receive it. In a short time it becomes loose, and is a source of much trouble, while the knife made with a shoulder brought to an edge, known to hardware dealers as "balance handle," and the metal continued of the thickness of the blade and of the same width and length as the handle, through which rivets pass from side to side, makes the most durable and satisfactory spatula I have yet seen. For those purposes which require a very stiff knife, the broken spatulas which are in almost every store, when rounded off at the end on a grind-stone, furnish an excellent and economical supply.

The work noticed in the second class requires a spatula rather stiff and short,—about four inches—being best adapted to manipulating with the masses required in prescriptions, the end of the knife being of such a shape as will scrape a considerable surface of the mortar when cleaning it after the mass has been thoroughly mixed, one edge being quite thin, so as to enable the operator to clean the pestle thoroughly.

The third class of work, that of mixing or dispensing powders, requires a knife of rather broad blade, and elastic, it being a much neater method of removing powders from bottles than pouring or tilting the bottle till the article runs out. When powders are to be mixed a good-sized knife is necessary, but this method is allowable only when the quantities are not large, the articles not very active, or the whole quantity to make but one dose. These knives are generally made of steel, and can be had pretty nearly in the condition required from the dealers in such wares.

A few words as to the size of spatulas will be appropriate before dismissing steel spatulas from further notice. The smallest knife generally useful is that about three inches in length of blade, nearly three-quarters of an inch broad, and tapering to three-eighths at the end. Its principal use is to dispense the alkaloids and most active remedies, which are commonly packed in small vials; in dispensing cerates and ointments, knives about six inches in length of blade will be found most convenient, and for mixing powders a long-bladed spatula will most usually answer best; while for dispensing powders from quart bottles an eight-inch spatula is best adapted.

There is a class of substances, the nature of which renders it entirely improper to permit steel spatulas to come in contact with them, some of them being possessed of strong combining powers. They vigorously attack metallic bodies which they nearly approach, thus entirely changing their own characteristics and ofttimes injuring the spatulas thus improperly used in dispensing them. Of this class iodine and bromine ointments, and ointment of nitrate of mercury, are instances; these and similar preparations require spatulas made of bone, hickory, whalebone, vulcanized rubber, glass, or porcelain. The four first mentioned are preferable to glass or porcelain, in consequence of their superior elasticity.

Spatulas of silver and platinum are sometimes used with advantage; the former, in weighing nitrate of silver, is quite useful.

The second class of utensils named in the query, viz., stirring-rods, demands that attention be paid more to the material of which they are made than any other peculiarity, their use being simply to keep the various substances in connection with which they are used in constant agitation, these being principally cerates, unguents and syrups. The most desirable article I have employed is a spatula-shaped strip of hickory or white ash, about eighteen or twenty inches long, two and a half inches broad, about three-sixteenths of an inch thick in the blade, and about four times as thick at the handle. This answers every purpose in making cerates or ointments in quantities of 10 or 15 lbs. at once; in making syrups, a piece of white hickory shaped like the spoke of a carriage wheel is well adapted when the quantities to be made do not exceed five or seven gallons at one time, and heat is required.

The other two pieces of apparatus, viz., agitators and mechanical stirrers, I have not seen in any shape that the limited wants of an apothecary, even requiring large amounts of this kind of work, made it desirable to introduce into his workroom, and therefore have not thought it desirable to report upon them in this paper, although I have seen a machine which, in my judgment, could be modified so as to meet the wants of those requiring such work to be performed with the certainty and exactness of machinery, and to whom the expense was not objectionable.

ON A TEST FOR THE RESIN OF CANNABIS INDICA.

BY WILLIAM PROCTER, JR.

Having accepted the question, "Is there a reliable test for the active resin of Cannabis sativa of the East Indies, whereby the genuineness of 'Extract of Indian Hemp' may be satisfactorily and easily ascertained by the pharmaceutist?" the following paper is offered as a reply.

It need hardly be said that extract of Indian Hemp is a valuable medicine in the opinion of many practitioners, when prepared from hemp tops that have had their virtues developed by growth in a favorable climate and soil. In East Indian commerce there are three substances derived from the hemp plant, viz.: *gunjah*, consisting of the flowers and incipient fruit, with the smaller branches; *bang* made up of the leaves and capsules without the stalks; and *churrus*, the resinous matter secreted by the hemp plant under favorable circumstances. These have been long known in the East, but the form in which it has been chiefly employed by European and American practitioners, is the alcoholic extract of *gunjah*. The variableness in the medicinal power of this extract has been the cause of much disappointment to physicians; for whilst some samples prove effective in half-grain doses, *ten* or even *twenty* grains of other specimens have failed to produce its peculiar influence on the nervous system. The extract of commerce varies in consistence and color. Its green hue is sometimes much darker than at others, and its odor is equally variable in strength. Although professedly an alcoholic extract, much of it is but partially soluble in alcohol of 90 per cent. In a sample of extract, that had been imported several years ago from Mr. Squire, of London, in bulk, as much as 40 per cent. of the preparation was insoluble in stronger alcohol. The undissolved portion was brown, and readily soluble in water.

In another sample from the same House in ounce jars, the proportion of aqueous extractive was hardly noticeable. Another sample, the origin of which was not known, and which was quite old, had a solid consistence, almost black color, and produced powerful effects at the time it was tried therapeutically many years ago. No feature of this extract is more marked than its softness. After a pretty thorough examination of the subject, I believe this to be chiefly due to *fixed oil* of the hemp seeds, which the tops often contain sufficiently developed to yield oil, and which is, to a greater or less extent, extracted by the spirit, and being miscible with the resin, they remain in close union.

As regards the extractive matter soluble in water, its presence is easily accounted for, either by the use of alcohol weaker than ·835, or by following strong alcohol with weaker spirit to displace the former, when the process is carried too far. When officinal alcohol alone is used, it may occur by continuing the boiling process until the percentage of alcohol gets below the standard strength, as will occur with officinal alcohol during continued digestion. Where the proportion of matter insoluble in alcohol is as great as 40 per cent., either error or design must have produced it, as under no ordinary circumstances will hemp yield to alcohol such a product.

In the process of Mr. Robertson, of Calcutta, described by Pereira, in which the vapor of alcohol boiling in a still is conducted into the top of a cask containing the gunjah, with an ordinary condensing worm attached to the bottom of the cask, this may also readily occur; as the last portions of vapor from the still will be much more watery than the first, they will dissolve the extractive and carry it down into the recipient along with the resin, to be mingled with it in the subsequent concentration to the extractive consistence.

M. Gastinel, of Cairo, Egypt, has suggested that the resin should be washed with water to rid it of this extractive.

M. Laneau, of Brussels, after finding that hemp resin is much more soluble in a mixture of alcohol and ether or chloroform than in alcohol alone, recommends the hemp to be exhausted by percolation with such a mixture, which not only dissolves the resin better, but does not dissolve the inert matter.

Messrs. T. and H. Smith, of Edinburgh, who have studied hemp resin closely, have preferred to treat the gunjah first with water, and then with solution of carbonate of soda, to remove inert matter soluble in these menstrua, after which the hemp is dried and exhausted with alcohol. The tincture is then treated with milk of lime and filtered, and the dissolved lime separated by sulphuric acid. This treatment by lime is probably intended to remove fixed oil, and any other resinous matter than the active one, should any be present. The tincture is then decolorized by passing it through animal charcoal, evaporated to a syrupy consistence, and precipitated by water and dried. This process produces the pure hemp resin, but is far too tedious to pursue with the extract, which, if wholly soluble in alcohol of 90 per cent., is sufficiently freed from the inert matter of the gunjah. To obtain the answer to the query, it became necessary to secure an authentic specimen of hemp extract, which was obtained directly from gunjah of good quality.

One thousand grains of gunjah were reduced to powder, with the exception of the stalks, moistened with half an ounce of alcohol pressed in a funnel, the stalks thrown on the top, and the whole slowly percolated with alcohol of ·817 sp. gr. until eight fluidounces of the tincture had passed; the process was then stopped, and the tincture reduced to an extract by careful evaporation.

The product was soft, of a dark, dull green color, had the peculiar odor of hemp resin well marked, and weighed 110 grains, equal to 11 per cent.

It had the following properties:—

Soluble without appreciable residue, in strong *alcohol*, *ether* and *chloroform*. *Benzole* dissolved all but a small residue of blackish green matter, which is wholly soluble in alcohol; and on the evaporation of the benzolic solution, the resin retained its odor and other sensible properties.

Oil of turpentine dissolved it quite readily, and the solution, on standing, became coated with minute scaly crystals, the nature of which was not determined.

Olive oil dissolved it completely, forming a greenish solution, which has been suggested for pharmaceutical use by Laneau and by Githens.

Sulphuric acid acts slowly on the resin in the cold, more rapidly hot, without intumescence, and when diluted with water, a greyish precipitate falls.

Nitric acid, sp. gr. 1·38, when cold, slowly attacks the extract, but when heated, rapid reaction occurs, red fumes are evolved, and the resin is converted into an orange red resinoid substance, about as abundant as the resin treated. This, when washed with water and dried, has the appearance of minute fragments of gamboge, which it closely resembles in color.

This substance is readily soluble in alcohol, ether and chloroform, and does not crystallize from these solutions on evaporation; it is also soluble in solutions of potassa and ammonia and methylic alcohol, but is insoluble in benzole and acetic acid, and appears to possess an acid reaction with litmus.

Liquor potassæ acts but slightly on this extract, apparently removing little besides matter soluble in water, and, perhaps, fatty oil when present, and a part of the green coloring matter.

Of these reactions those best calculated to indicate true hemp resin extract, are:—

1st. Its odor when moderately heated.

2d. Its indifference to alkalies.

3d. Its solubility in alcohol, ether, chloroform, benzole and turpentine; and

4th. The reaction of nitric acid, which is the best marked test.

Before trying other resins it was deemed best to procure some American grown hemp, and make an extract from it with the same menstruum. Fortunately this was easily accomplished, and the tops only of vigorous specimens of the cannabis were selected, dried and powdered. The color was deep grass green, the odor rank, but different from gunjah. Three hundred grains were reduced to powder, and treated with the same alcohol in like proportion as in the preceding experiment, and a soft extract, weighing thirty-seven grains, was obtained.

The color of this extract was a brighter green, and its odor quite different from the extract of gunjah; it rubbed down readily with liquor potassæ, making a dark colored liquid, not all in solution. When treated with hot nitric acid, rapid effervescence of nitric oxide followed, leaving a yellowish liquid with a very small proportion of orange-colored resinoid matter, which appeared to be the same as that from Indian hemp.

It is very clear, from these results, that the extract of common hemp may be easily detected by its solubility in caustic alkali, and the small portion of resinoid it yields by nitric acid.

1. The extract of Indian hemp before alluded to as having 60 per cent. of resin, was tried by these tests, and the resinous matter found to correspond with that made from gunjah.

2. Squire's extract in ounce jars afforded a large proportion of resin, which reacted with nitric acid like that obtained from gunjah.

3. A sample from my cabinet, fifteen years old, nearly dry, in dark greenish-black masses. This, when acted on by nitric acid, did not lose its greenish color, and altogether behaved differently from that made from gunjah.

4. Guaiac resin, treated with nitric acid, first became blue,—afterwards yellowish brown, but yielded no yellow resinoid.

5. Common resin yielded a yellowish resinous product by nitric acid, but entirely different from that obtained from hemp resin; in fact none of the resins tried have afforded a product similar to that from Indian hemp.

Whatever merit there may be in this test, it must be made more manifest by further experiments, with a series of extracts of known origin and therapeutic powers, so that it may be seen whether the results of testing are parallel with medicinal power: and the attention of members is invited to the subject, that they may, from samples tried by the physicians of their several neighborhoods, apply these tests, and ascertain their real value or accuracy.

ON PYRETHRUM ROSEUM.

BY GEORGE F. H. MARKOE.

At the meeting of the American Pharmaceutical Association held in Boston in the year 1859, a package was received from the Agricultural Department of the U. S. Patent Office, containing the seeds of several species of valuable medicinal plants. Among these were seeds of the Pyrethrum roseum.

By vote of the Association, the seeds were placed in charge of Dr. Asa Gray, Professor of Botany in Harvard University, and were planted by him in the Cambridge Botanical Garden, and some fine plants were obtained, which in due time blossomed, and matured seed. The seed, yielded by the American-grown plants, were sown by Prof. Gray, but they did not germinate. The root-stocks of the old plants, on the second year, threw up shoots, and it was found that the plants reproduced themselves rapidly by the spreading of these root-stocks.

This Pyrethrum is a hardy perennial, and it is the opinion of Prof. Gray, that it can be easily introduced, and the collection of its flowers made a profitable business, thus rendering us independent of foreign countries for our supply of this valuable insecticide. The two specimens on the table were kindly given me by Prof. Gray.

Boston, *September*, 1864.

THE PRESS.

BY R. H. STABLER.

"What is the best kind of press for the pharmaceutical laboratory on a moderate scale, combining great power with simplicity and easy manipulation? and can the principle of the hydraulic press be employed?"

In the examination of this question, it will be necessary to state the difficulties in the use of each kind of press that interferes with its efficiency as a help to pharmaceutical operations. All presses are constructed of one of the following mechanical powers: the lever, screw, wheel and axis—which, with the rack and pinion, is a modification of the lever—and hydrostatic pressure.

The simple lever is not well adapted to our uses, as it yields but little power, comparatively, for the space occupied, but answers for some purposes where rapid execution with small power is required; for instance, for pressing dried herbs, or stamping toilet soaps. Of lever presses, that invented by Mr. Dick, of Meadville, Pennsylvania, is a very ingenious instrument. He calls it "Anti-friction Cam Press," and for many operations, where great intensity of action with limited motion is required, it answers a good purpose, and is, perhaps, the most successful effort to overcome friction, except the hydrostatic press: the amount of motion allowed, however, is too limited for general use in the laboratory. A description of this instrument will be found in "Appleton's Dictionary of Mechanics."

The screw, of all the mechanical powers, has been the most used as the means of advantageously applying power to useful ends; and were it not for the great waste of effort, through friction, it could not be surpassed for convenience and efficiency. Friction plays so important a part in the action of the screw, that it is important for us to understand its principles fully in estimating the power of that kind of press.

If we examine the edge of a finely-sharpened steel instrument with a microscope—although to the naked eye it appears free from inequalities—a number of fine saw-teeth are revealed; the same is found to be the case over the whole surface of any piece of metal, varying in size for different kinds, and as it is more or less polished. When two pieces of metal are brought in contact, these projections on the surface fit into each other as the teeth of similar saws would, thus allowing the bodies, in a degree, to enter into each other; and the friction is greater between similar bodies than between heterogenous ones of dissimilar grain. Another cause is the cohesive attraction between the touching substances.

"The degree of friction must evidently depend on the angles of the natural protuberances, and which are determined by the elementary structure, or the mutual relation of the two approximate substances. The effect of polishing is only to abridge these asperities and increase their number, without altering in any respect their curvatures or inflections. The constant or successive acclivity produced by the ever-varying adaptation of the contiguous surfaces remain the same, and consequently the expense of force will still amount to the same proportion of the pressure."

"The intervention of a coat of oil, soap or tallow, by readily accommodating itself to the variations of contact, must tend to equalize it, and, therefore, must lessen the angles, or soften the contour of the successively emerging prominences, and thus diminish likewise the friction."

In order to diminish friction, advantage has been taken of one body rolling over another instead of dragged, by which it is greatly lessened, as in the friction rollers and cam of Dick's Press.

It has been found by the experiments of Ferguson and others, that the least friction is generated when polished iron moves upon brass; the screw, therefore, should be worked through a brass nut. The screw press, although the best before the application of the principle of hydrostatic pressure by Mr. Bramah, cannot now compare with it: and as the friction of the screw increases with the intensity of pressure, a limit is soon arrived at, when the force exerted upon it is lost in friction, and if forced by the power of steam to greater effort, the instrument is destroyed by the grinding of the metallic surfaces. Even in ordinary use, this friction is always much greater than the whole of the reacting force, for there are few instances where a screw will return from extreme pressure, when the moving force on the lever is withdrawn. It is also to be considered, that the whole force of the weight or resistance acts directly upon the face of the thread of the screw, at the place where the motion is required to take place.

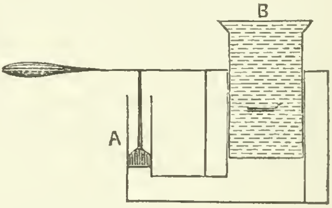
Several convenient forms of screw presses are figured and described in Mohr, Redwood and Procter's Pharmacy, well adapted to pharmaceutical operations.

The rack and pinion press is worked like the screw, by the help of a lever; it has the advantage of diminished friction, as compared with the screw; and although it has many points of contact, the rolling motion is substituted, which causes less friction than the rubbing of two surfaces together, as in the screw. A very convenient form of this kind of press is figured in Muspratt's Chemistry, as applied to arts and manufactures. Vol. i. p. 465.

The hydrostatic or water press has superceded all other kinds for many purposes, where strong pressure is required.

This machine was patented in England, in the year 1796, by the inventor, Mr. Joseph Bramah.

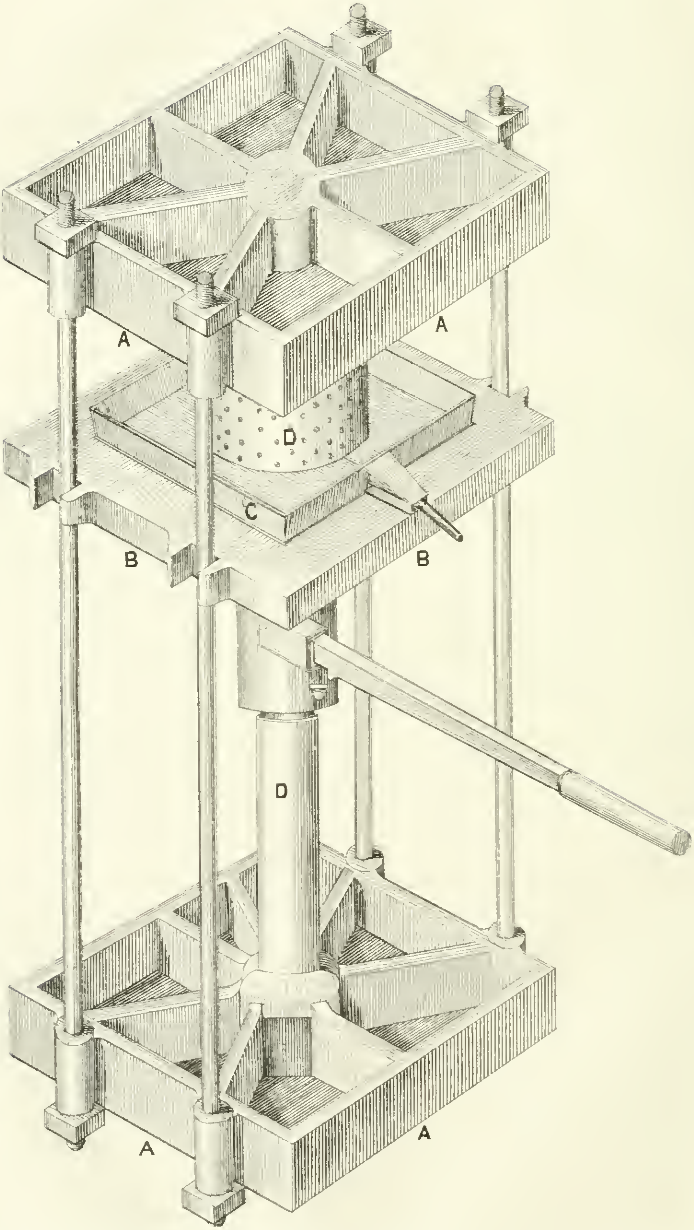
In examining the principles of its action, it will be necessary to remember that the particles of fluids move freely among each other almost without friction, "and when a quantity of fluid is submitted to compression, the whole mass is equally affected, and similarly in all directions. A given pressure, therefore, made upon an inch of the surface of a fluid confined in a vessel, as by a plug forced inwards, is suddenly borne by every inch of the surface of the vessel, however large, and by every inch of the surface of any body immersed in the fluid."



Hence, if in a vessel constructed like the figure, filled with water or other incompressible fluid, a pressure of one pound be applied to the piston in the tube A of one inch diameter, a pressure of one pound will be communicated to every portion of the lower surface of the ram B of one inch area; and if the area of B is ten times as great as the area of A, one pound pressure on A would exert an upward pressure of ten pounds on B, and by the use of a lever attached to the smaller piston, and increasing the size of the larger one, we may, through the medium of confined fluid, exert a force of many thousand pounds with little waste of power from friction.

To calculate the power of the hydrostatic press, it is only necessary to know, "that if there be a mutual communication between two columns of any fluid, whatever pressure may be exerted on the one, will be transmitted to the other in a ratio proportional to the respective area of each column; consequently, the proportion of the area of the injecting pump A, to that of the cylinder of the ram B, constitutes the hydrostatic power of the press, and the mechanical effort exerted on the injecting pump is transmitted to the cylinder B, by the intervention of the fluid, in a ratio proportional to their comparative areas." If the diameter of the piston A be half an inch, and that of B two inches, that is to say four halves of an inch,

DUDGEON'S



PHARMACEUTICAL PRESS.

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one pound lodged on the piston rod of A will be in equilibrio with sixteen pounds lodged on the table B, the weights of the parts of the engine attached to, and moving with each piston, being respectively included; and if the long end of the lever be twenty inches, and the short end, or distance between the centres of motion, two inches, one pound at the end of the lever will give an advantage of ten pounds on the end of the piston rod. Instead, therefore, of ten pounds on the table B, being equal to counterpoise this last action, there will be required one hundred pounds. But a man in this action of pumping, by a downward pressure, can, without difficulty, apply his whole weight, and with great ease, fifty pounds. In this case the pressure will be equivalent to fifty times one hundred, or five thousand pounds.

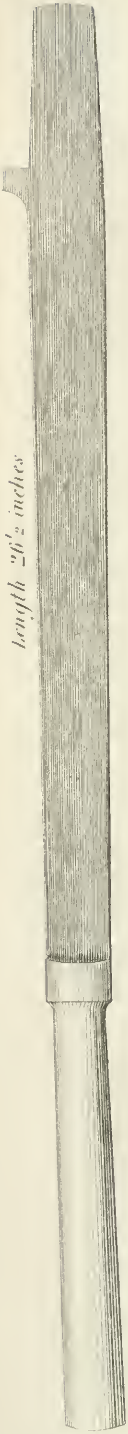
The hydrostatic press, as originally constructed by Mr. Bramah, is too complicated and bulky for laboratory use.

A convenient and portable modification of it was patented by Mr. Richard Dudgeon, of New York City, July 8th, 1851, as an "Improved Portable Hydraulic Press, or Jack." I have drawings of the parts of this jack for the inspection of the Association.

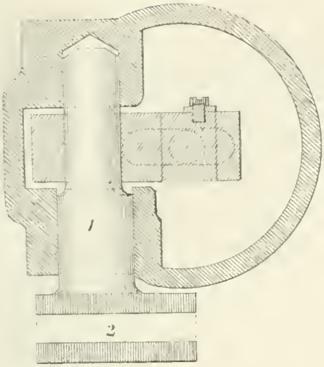
Plate 1 is a representation of the jack rigged for a laboratory press. The two plates AA are of cast iron, eighteen inches square, connected by four iron rods, each one inch in diameter, and four feet long, and secured by nuts screwed on the ends of each bar; this forms the press frame, and occupies a space on the laboratory floor eighteen inches square only. The movable platten, or central plate B, rests on the top of the jack D; on this plate sits a shallow tin pan, one foot square, with a spout or drip leading over the edge of the plate to conduct the expressed liquid; in this tin dish sets a round cast iron press box D, open at both ends, turned true on the inside, and pierced with numerous small holes to permit the expressed fluid to escape: this box is five inches high, and six inches in diameter. The space between the top plate A and the platten B is ten inches, and this is the extent of motion in the press. The followers may be made of cherry, or some other hard wood covered with tin.

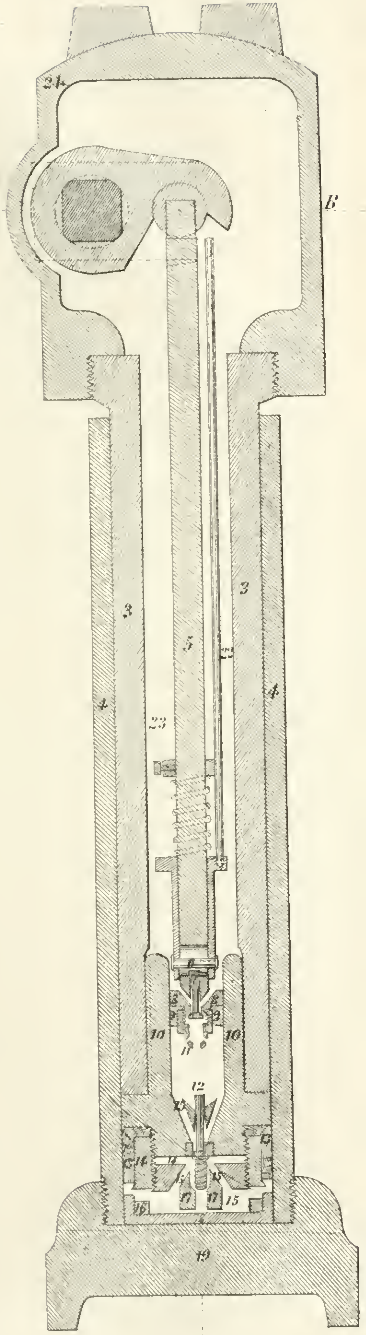
Plate 2 represents a section of the jack through its centre from top to bottom. It consists of two hollow cylinders, one working within the other; the inner one (3) being the reservoir of fluid and the ram: its capacity is such as to furnish fluid enough to fill the outer cylinder, when the ram is forced out. No. 2, in the cross section, is the socket for receiving the handle. No. 5, in the longitudinal section, is the piston of the pump within the inner cylinder; 7 and 12 are valves of the pump, both opening downward; the lower one is held in place by a spiral spring; 13 is leather packing, held in place by the follower 14; 20 and 15 are the passages for the flow of fluid when the pump is worked, of which 20 should be the largest to permit a free supply to the pump; 9 is the leather packing on the ends of the piston, like that in the ram at 13; Nos. 6 and 22 is an arrangement for opening the valve 7, by depressing the handle; No. 10 is the cylinder of the pump fastened into the end of the inner cylinder, or ram: there is a small hole (24) in the upper part of the head of the ram, loosely fitted with a screw to allow the inner cavity, or reservoir of the ram, to be filled with water, whisky, oil or other fluid; and another very small hole (25) to serve as a safety valve, when the ram has been forced out as far as it is intended to go.

The operation of the ram is as follows:—When the inner cavity is full of fluid, and the piston is raised, the valve (7) is forced open, and fills the cavity of the pump; when the piston is forced down again, the valve (7) is closed by the pressure of the fluid, and the valve (12) is forced open, and the fluid flows through the passages (15) into the cavity of the outer cylinder, and forces the ram up. When it is desired to lower the ram, the handle is reversed, with the little stop or tongue upwards to allow it to be depressed lower, until it comes in contact with the upper ends of the rod (22); this depresses the bar (6) on the stem of the valve (7), opens it, and allows the fluid to flow back from the cylinder of the pump into the inner cylinder (23); the piston can then be depressed, when the projecting end comes in contact with the stem of the valve (12), and opens that also; then the fluid in the outer cylinder can flow



Horizontal Section through A.B.





SECTION

through centre
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PUMP AND VALVES

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freely through all the passages back into the inner reservoir, and the ram is lowered by its own weight.

The only friction in this press is at the leather packing, 9 and 13, and is the same under great or little pressure; this reduces this important element of calculation to a constant quantity, giving this an important advantage over any other press; the friction among the particles of fluid is almost nothing. The jack is portable, and only sets in its place in the press frame; it can be lifted out from beneath the platten B, and used for other purposes if desired. Dr. Squibb has used one of these presses in his laboratory for a long time with great satisfaction, and I have had one in constant use for nearly a year, and think it is as near perfection as we can hope for.

Plate 2 is full size, twenty-six inches high, and is made to yield a pressure of ten tons, (or to lift a weight of ten tons when attached to the head,) when the weight of one man (150 pounds) is applied on the end of the lever, and the press is not intended to bear more.

ON THE ODOR OF COMMERCIAL TANNIC ACID.

BY WILLIAM PROCTER, JR.

The following query was accepted by the writer:—"Pure tannic acid being an odorless substance, is there an odorous substance in nutgalls, that is found adhering to commercial tannic acid? or is the odor commonly noticed in that substance due to impure ether used in its preparation?"

According to Dr. Wood (U. S. Disp.) "galls are inodorous." Pereira says, "Galls have no odor." (Elements, page 323, vol. II. Am. Edit.) Christison also says, "Galls are without odor." Notwithstanding these opinions, at least two of these authorities give volatile oil as one of the ingredients of nutgalls.

My own examination of galls induces the opinion that, in their whole and dry condition, they have but little odor where they are in a box or drawer; when, however, galls are bruised, or in a powder, a distinct odor is manifest, which is well marked, though not very prominent. When, therefore, ordinary alcoholic ether is allowed to percolate powdered galls, it should remove this odorous substance along with the tannic acid and green and brown coloring matters, and deposit them on evaporation with any impurities the ether may contain.

To put this matter to a practical test, a bottle of ether was procured from Dr. Squibb, which left hardly a trace of odor when evaporated on a surface. This was mixed with a due proportion of alcohol and water, and passed through powdered galls. The ethereal percolate was evaporated to dryness in a capsule, with sufficient heat, until the ether was dissipated. The residue, when dry and brittle, was rubbed to powder. It had a greenish color, and a decided odor of bruised nutgalls, but no odor of impure ether.

A portion of this tannin was digested in benzine, in which liquid, tannic acid is insoluble, and on evaporating the benzine in a glass capsule, until the odor of that substance entirely disappeared, a minute residue, possessing the well marked odor of nutgalls, remained in the capsule.

The inference, therefore, is, that the odor of commercial tannic acid is chiefly due to the odorous principle of nutgalls, to which is added coloring matter of the galls, and sometimes the odorous matter derived from the ether; and that, owing to the insolubility of tannin in benzine, its odor and some of its color may be removed by digestion with that liquid.

IN REGARD TO THE PRESERVATION OF GARLIC.

BY A. P. SHARP.

In accepting this query it was not with the expectation of making any extensive experiments in regard to the subject referred to, but more especially to propose to the Association the plan I have pursued for some years to protect the bulblets against the germination which is so fatal to the virtues of the plant as a medicinal agent. At the proper season I carefully select the quantity needed, and after depriving them of their superfluous leaves, stems, &c., place them in a bottle which is securely closed with either glass or cork stopper, and pour upon them a small portion of alcohol, say about two ounces to a quart jar. The vapor of the alcohol is soon absorbed by the bulbs, and, so far as my experience goes, entirely destroys all their vitality; hence, all tendency to germinate is destroyed, and in this manner the article under consideration can be kept (as I have done) for years, and at the same time its virtues apparently maintained to the last so far as smell, taste, &c., goes to prove it.

ON A BRANDY SUBSTITUTE.

BY EDWARD PARRISH.

"What course should be adopted by Pharmaceutists, in view of the present state of the liquor market, as regards factitious brandies and wines?"

This question has occupied my thoughts occasionally for some years, in its moral as well as its scientific and commercial bearings, and yet I hardly know what to answer, now that it is propounded to me by the Association.

At our meeting in 1860, a discussion grew up upon the subject of alcoholic liquors, in which I took the liberty of advancing the heretical idea that, as one can manufacture with the inodorous alcohol, so readily obtainable, a brandy identical with that we buy from the custom-house stores, and, as there is no merit in having it imported, we might make it ourselves as well. I did not, of course, advocate a fraud upon the revenue, nor upon the community, but inquired whether we might not originate a liquor to be used instead of brandy, and to be made officinal or semi-officinal under a distinctive name that all would understand.

The disadvantage that the course proposed would cheapen this most powerful of the intoxicating drinks so as to place it within more convenient access for use as a beverage, has, to a great extent, disappeared since the extraordinary rise in the price of alcohol. The objection that Government would lose, to some extent, one of its chief sources of revenue, is also now answered by the fact of the heavy taxation on domestic liquors.

I will briefly recapitulate the facts and arguments which lead me to adopt the idea I have stated above, and then offer some further suggestions, in no dogmatical spirit, for I feel that the subject is one requiring great wisdom in counsel and a fuller discussion and investigation than I am now able to give it.

Firstly. There is abundant evidence that the genuine brandies are nearly always made, wholly or in part, from alcohol procured from other sources than from the juice of the grape. The catawba wines of Ohio and elsewhere have been distilled for the production of brandy, and it is well known that, produced in this way, Catawba brandy would cost six times the cost of the wine from which it is made, whereas, they are offered at very nearly the same price.

About the same relation exists between the production of foreign wines and of their corresponding brandies, and yet we know that brandies can usually be bought at about double the price of wines.

Secondly. In works treating on the subject, a variety of formulas are published, which are used by manufacturers for the production of various brandies. An examination of these shows that they may be as successfully produced in this country as abroad, provided the ingredients can be procured. Of these ingredients, the only one which is very costly, or liable to adulteration or sophistication, is the so-called Essence of cognac. This is obtained in considerable quantities from the foreign producers, and might be directed in the proposed formula, though it is well worth inquiry whether it is necessary to the successful production of the proposed liquor. This essence is the product of the distillation of the marc left after the expression of the wine, and is an ether which may be imitated by chemical processes, though probably not perfectly. The marc of each separate wine yields a somewhat different essence, and it is believed that every brand of brandy can be imitated by the use of the essence distilled from the marc of its corresponding wine, though the essence is used in very minute quantity, and is only important as communicating the peculiar flavor or boquet.

Thirdly. The most important considerations in favor of this proposition are, that it would equalize the profits of this manufacture, throw it open to more general competition, and improve the average quality of the product by bringing it within the domain of legitimate professional science. At present, it is essentially a fraudulent branch of trade, enormously profitable to the few who, from lack of principle, engage in it. Brandy should be and might become, under proper regulations, an officinal preparation, dependent only, as to quality, upon the skill and honesty of the manufacturer, and, by being always made according to the same formula and to conform to a well known standard, would cease to be subject to the caprice and ever-varying taste of the *connoisseur* who might still indulge his fancy in purchasing *recherché* foreign brands at fancy prices, while the legitimate article, properly designated, would hold its own for the purposes of the physician and pharmaceutist, and those who resort for their supplies to these, the proper conservators of medicine.

We now approach the stumbling-block which still, as heretofore, lies across the track of the proposed reform. It may be thus stated. Brandy is a distinct, well known product; defined by Dr. Johnson as "a strong liquor distilled from wine;" by Webster, as "an ardent spirit distilled from wine;" by Dunglisson, as "the first liquid product obtained by distilling wine;" by Dr. Thomas, in his new Medical Dictionary, as "the spirit distilled from wine." What we propose to make will not come under these definitions, though Worcester approaches nearer the general statement: he defines it as "a strong distilled liquor."

The word brandy is stated by Johnson, the great lexicographer, to be derived from brande wine, which literally means burnt wine. His definition, with that of Webster, Dunglisson and Thomas, refers to the original distilled wine which is now, as a pure product, almost obsolete. It was colorless when fresh, acquiring, by being preserved for a long period in casks or pipes, an amber color, a very slight astringency, technically termed roughness, and, as a result of ripening by time, a peculiar ethereal flavor and slight acidity.

In the progress of the industrial arts, a demand occurring for strong alcohol, various starchy and saccharine materials came into common use for its production, even in grape-producing countries, and brandy began to be made of rectified spirits. The brown appearance was imparted to it by adding coloring matters, especially caramel, which, as might be expected, was soon used in excess, producing a darker-colored liquor than formerly, and we may infer that this is now used to add depth and richness to the naturally pale genuine brandies. The flavoring ingredient already mentioned,—essence of cognac,—is a very variable material, liable to adulteration and to sophistication, the principal chemical substitute being œnanthic ether, a material quite within the range of chemical manufacture, but which would require a full and complete investigation of all its properties and adaptations before it could be recognized as suitable for the purpose. Under the name *Eau de Vie de marc*, the French sell an article distilled from the marc of wines which is used to flavor plain spirit and convert it into brandy. Oil or essence of cogniac is also largely produced and sold, though of very variable quality. The other ingredients occasionally added are catechu, to impart "roughness;" French plums, for their flavor; acetic ether; acetic acid, and, by those who carry the art of adulteration to the extreme, Cayenne pepper, grains of paradise, horse-radish and almond cake. Viewed with reference to the cheapening of imported brandy, an English author remarks, that "adulteration is the rule, not the exception."

The term adulteration cannot, however, be justly applied to the manufacture of brandy of standard quality by the recognised processes used in France, in which pure alcohol is used to substitute or supplement the distilled juice of the grape, and which might, as already remarked, be practised with equal success wherever the ingredients could be obtained in purity.

Dr. Ure gives a formula of which he says, the product "may be reckoned as wholesome as alcohol in any shape can ever be."

As far as the authority of lexicographers can determine the meaning of words, genuine brandy seems now to be a product of the distillation of wine; but since the meaning of a word is constantly liable to vary, in accordance with the changes going on in society and the arts, this need form no exception, and we may look forward to a definition similar to that of Worcester,—"a strong distilled liquor,"—being adopted in the future.

In the mean time, the question is asked by the Association, What should we, as pharmaceutists, do in view of the facts above detailed? I know of no better answer than this. We should set about substituting the variable, uncertain, adulterated brandy of commerce, by a definite liquor of the same alcoholic strength as the standard specimens, and with a new and appropriate name.

Of the Latin names applied to brandy by different authorities, none are strictly applicable; Vinum Adustum seu Crematum defines a burnt rather than a distilled product; Spiritus Vini Gallici, (U. S. P.) and Spiritus Gallicus, would exclude all liquors, even if distilled from wine, if not of French origin. Aqua Vitæ and Eau de Vie are well understood French appellatives, but quite unsuited to the purposes of our pharmacy. The idea to be conveyed, is that of a spirit of a slightly red color, rendered grateful and acceptable, as contra-distinguished from rectified spirit or alcohol, which is adapted to use in the arts and for external applications. *Spiritus Rubellus Gratissimus* is such a term,—the most grateful, slightly-red spirit. As an officinal name, I think this a great improvement on any in use; and it is proposed, after consultation with competent linguists, as possessing the requisite euphony in accordance with the genius of classical literature and at the same time describing the substance accurately; a convenient abbreviation would be, *Spt. Rub. Gratis.*, which is not too long for common use.

The chief difficulty, however, is to invent a synonym for use in commerce. Here, if we would escape the imputation of confounding our preparation with an imported article, different in origin if not in properties, we must invent a new word to be used at least as a distinctive synonym, even if not to the exclusion of the term brandy. I am aware of the great difficulty of substituting a new synonym for one so long popularly used, but the advantage to be gained will justify the attempt. The Latin name proposed furnishes several abbreviated terms, thus: Spirugrate, Spirubel, Gratispir, Spirub, or Spirug; they sound strangely to our unaccustomed ears, nor do I know that either of them could become popular.

A wider range given to this word-making, would furnish a variety of terms from which to select one to represent our proposed new officinal colored and flavored spirit. I here take leave of this branch of the subject, leaving to others its more complete investigation.

The next branch of the subject requiring attention, is the formula and mode of preparation of the spirit. Upon this it is not my purpose to enter at this time. It were easy to insert here various published formulas, and to exhibit the brandy as made by them, but I feel that the subject should be taken in hand in a spirit of thorough and accurate research,—the methods of purification of the alcohol, its precise specific gravity or proof, the quantity of caramel or other coloring matter to give the color of pale brandy, and the method of flavoring. If possible, an artificial ether should be used not dependent on the crude process of distilling the marc, which must always yield an insufficient supply and of varying quality; this should be used in extremely small quantity, and an inquiry should be carefully instituted whether it is essential as a merchantable and agreeable product.

The best mode that occurs to me for us to reach the information desired, is to offer a prize for the best monograph on the subject, including the following points: 1st. The best commercial and officinal names to designate factitious brandy. 2d. The best formula for its preparation, including the purification of the alcohol and the preparation of the several added ingredients.

Let the offering of this prize be publicly advertised in the scientific journals of this country, in England and in France, and let the funds be raised by a special subscription.

ON CAPSICUM.

BY EDWARD PARRISH.

"Is there a crystalline principle in Capsicum or does it owe its pungency to a soft resin?"

The experiments upon Capsicum, reported in the American Journal of Pharmacy, vol. xxiv., page 303, by Horace B. Taylor, having been performed under my supervision, the above query has been referred to me for a conclusive answer, and in the press of numerous engagements I have referred it to Albert E. Ebert, until recently assistant in the course of instruction in my school of practical pharmacy. By him a further course of experiments has been conducted, which I think goes far to prove that the Capsicin of Taylor is an impure product, and that when completely isolated it ceases to possess the crystalline character. By Taylor, powdered Capsicum was treated with anhydrous ether and evaporated, the oleoresinous product was digested in strong alcohol, sp. gr. ·809, the filtered alcoholic solution was treated with subacetate of lead, which threw down a copious precipitate; this was separated by filtration, and the clear tincture treated with sulph-hydric acid; the precipitated sulphuret of lead was now removed, the solution boiled, again filtered, evaporated and set aside on an intensly cold day to crystallize. A mass of nearly white, feathery crystals was obtained; these were not free from lead, and on further purification lost, to a great extent, the crystalline character. The first part of this process was repeated by Ebert, a somewhat weaker alcohol, sp. gr. ·817. being used to treat the oleoresinous ethereal extract. The tincture formed was slightly acid to test paper. An alcoholic solution of subacetate of lead was now added to saturation, the precipitate being removed on a filter; sulph-hydric acid was passed through it, though without removing all the lead. Sulphuric acid diluted with alcohol was next added for the same purpose, and on the removal of the precipitated sulphate the acid solution was treated with lime to remove the excess of sulphuric acid, as sulphate of lime filtered, evaporated and set aside to crystallize. After some days the solution was found to be a mass of confused crystals, which, though very pungent and irritating, contained both lime and lead, shown by a large residue when they were burned on platina foil.

The portion of the oleo-resin not taken up by the alcohol was oily, and on standing separated into two layers, a dark brown. very thick waxy magma subsiding and a light oily liquid floating above it; both were lighter than water, to which they imparted their pungency. By distillation a very pungent empyreumatic distillate was obtained. The residue, after treatment with ether was extracted by water, acidulated with acetic acid. It had but little pungency; this was precipitated by subacetate of lead, which separated a large amount of vegetable matter, which was treated with boiling alcohol, sp. gr. ·817, evaporated and set aside to crystallize; after a time it deposited a pale reddish nearly tasteless precipitate, evidently a compound of inorganic salts. From these experiments it may be inferred that the Capsicin of Taylor is a lead compound, and the true active principle of Capsicum is the oleo-resin, and that the crystals, forming in the alcoholic solution after precipitation with subacetate of lead, owe their crystalline character to inorganic substances present.

REMARKS ON DIALYSIS.

BY WILLIAM PROCTER, JR.

At the meeting of 1862, at Philadelphia, the question, "Is the process of Dialysis applicable in Pharmacy, and if so in what instances may it be employed?" was submitted to me, and not being reported on in 1863 at Baltimore, was continued to the present occasion. As the term "Dialysis" may not be familiar to all present, it has been deemed best to say a few words in regard to it: In the year 1849 Prof. T. Graham, of London, published his views of "liquid diffusion," or the tendency which substances in solution, when brought in contact, have to diffuse themselves into the common menstruum, or into each other. For instance, if a solution of sulphate of zinc, and another of sulphate of magnesia, of the same specific gravity, be carefully placed in contact, one above the other, and left at rest, the law of liquid diffusion will cause the salts to distribute themselves each over the whole menstruum. If only the lower stratum is a saline solution, and the supernatant liquid is water, then, contrary to specific gravity, the salt will diffuse itself into the water above, just as dense gases diffuse themselves into the atmosphere, but in a much slower ratio.

In pursuing this subject afterwards, Prof. Graham made the important discovery that when a hydrated septum, or diaphragm of a gelatinous character, was interposed between the liquid to be diffused and the water into which the diffusion was to take place, many substances could not pass the septum, although in perfect solution, whilst others would pass with greater or less facility. On closely examining into the nature of these two classes of bodies, he found that those which passed the septum were generally crystalline in their nature, or formed crystalline compounds; whilst those which did not pass were amorphous in their structure, and, like gelatin, albumen, starch, &c., did not crystallize. The former he called *crystalloids*, and the latter *colloids*.

It then occurred to Prof. Graham that this law might be rendered subservient to analysis in the separation of one class of bodies from the other; and after many trials, which satisfied him of its value, he called the analysing power of the septum *Dialysis.*

It has long been known that certain animal tissues and porous bodies will allow the passage of one fluid and almost entirely deny the passage of another, when the two fluids are presented at the same time. This quality has been indicated by the terms *exosmose* and *endosmose*, according as the current passed into or out of the vessel of which the tissue formed a part. This quality, which enters largely into the physiological action going on in living vegetables and animals, was supposed to depend more on the nature of the tissues than as influenced by the substances themselves, and it is only since the subject of liquid diffusion has been developed by Graham that more correct views have been entertained.

In the endeavor to render dialysis a practical process, Prof. Graham employed many kinds of tissues, animal membrane of different kinds, thin sheets of gelatin, starch jelly, but none offered so great advantages as the parchment paper of Gaines, which, you are aware, is unsized paper that has been submitted to the action of bihydrated sulphuric acid, and subsequently washed to free it from acid. Parchment paper bears the same relation to crude vegetable fibre (as cotton or flax) that starch granules bear to starch jelly, formed by the rupture and intimate union of those granules. The rationale, given for the action of the hydrated septum, is this: Suppose syrup of gum Arabic mixed with water be placed within the septum—gum being colloidal in its nature has not the power to abstract water from the colloidal septum, whilst the sugar possesses this power, enters the pores of the septum by means of its water, and passes out into the water beyond. The action of parchment paper, and other tissues that act by hydration, can be used only with aqueous solutions, it being yet a desideratum to find a material which shall act equally well with alcoholic and other menstrua.

Mr. Graham's method of dialysing liquids was to use a cylindrical hoop of sheet gutta percha, about two or three inches deep and six inches in diameter, over the lower end of which a sheet of parchment paper is secured by bringing the edges up around the outside of it in a plaited form, and securing them with cord. A larger vessel, capable of holding six or eight times as much liquid, is then filled with water so that the septum may float or be suspended at the surface of the water after it is filled with the liquid to be dialysed, so that the liquids outside of and in the cylinder shall be on a level when the action proceeds from the upper into the lower vessel. This manner of arranging them gives specific gravity in favor of the process, but the action of the septum would also go on if the liquid was at the bottom of the water. The solution of the diffused body is called the *diffusate*, and is always a very dilute solution.

What was then known of this subject was fully developed in an elaborate paper by Prof. T, Redwood, of London, in a lecture before the Pharmaceutical Society. (See Pharm. Journal, 515, 1862, and Amer. Journ. Pharm., July, 1862.) The most important points in question are the applicability of the process to the purposes of pharmacy, and pharmaceutical chemistry and toxicology. Heretofore it has been employed in toxicological analysis with the promise of great success, as in dialysing the crude contents of the stomach of a poisoned animal, containing, for instance, arsenious acid, corrosive sublimate, strychnia or morphia. Mr. Redwood has pointed out its probable use in isolating proximate principles in sufficient quantity to be employed by the manufacturer, but heretofore no septum has been found sufficiently active to abridge the time and increase the strength of solutions, to bring the process within the limits of a just economy.

One of the best practical applications of this process is that suggested by Mr. Whitelaw, (Pharm. Journal, April, 1864) of dialysing meat brine to remove its salt, and isolate its extractive material in a fresh state, so as to get extract of meat, which can be used in soup with great nutritive power; and when added to the salt meat restoring it to the value of fresh meat in composition.

The same writer suggests (Chemical News, May 28, 1864) that salt meat may, in the same way, be rendered fresh by being enclosed with its brine in a sack of skin and soaked in water.

The applicability of dialysis to *qualitative* analysis promises great success; already much has been accomplished, and it only needs a further prosecution of experiments to bring out much valuable information.

M. Grandeau (Chemical News, July 16, page 25) has presented the use of dialysis in the investigation of the vegetable alkaloids. So accurate is the eliminating power of this process, that a weighed quantity of digitalin, dissolved in a given proportion of distilled water, was obtained by the evaporation of the diffusate in a quantity nearly identical with that dialysed. Digitalin was then dissolved in urine and dialysed. The diffusate was evaporated to dryness and extracted with alcohol, and this evaporated, when the residue afforded clear and unequivocal evidence of the presence of digitalin to the ordinary tests.

The alkaloids morphia and brucia, and digitalin, were mixed with equal quantities of an infusion of the contents of the stomach of a dog and separately dialysed, when each diffusate, after 24 hours, was evaporated to dryness and extracted by alcohol to reject the mineral salts, when the several residues yielded the alkaloids. In reflecting what substances would best furnish results for illustration in this paper, I have selected opium, Peruvian bark and wild cherry bark, and will now offer a few results, necessarily very imperfect from having been deferred too late to develope them further than the threshold of their capabilities. Twenty grains of powdered opium were rubbed with two fluidounces of water, and subjected to the action of fourteen fluidounces of pure water in a pint vessel. The dialyser in these experiments was constructed in the simplest manner. First, a salt-mouthed pint bottle, containing fourteen fluidounces of water, was obtained; next a circular piece of parchment paper, perfectly hydrated, was then carefully pressed into the mouth of the bottle, so as to occupy nearly all of the remaining space, using a little care in folding or crimping the circumference so as to make a kind of paper cup with plaited sides; into this the solution of opium was poured with the dregs, when the stopper was forced in gently so as to enclose the paper between it and the neck of the bottle. (Should the level of the liquids vary, the equilibrium may be restored by raising or lowering the paper; after which, on replacing the stopper, the vessel can be set aside. By tying a string around the paper, so as to bind it to the stopper, the latter with the paper and contents may be lifted up, and the diffusate examined at pleasure.) After 24 hours the diffusate was tested; nitric acid reddened it and a persalt of iron also produced the indication of meconic acid. The diffusate was decidedly bitter, and had a very light straw color. It was then evaporated to a syrupy consistence by direct heat at first, by which the solution was rendered darker; on standing, crystals separated, and the whole dried as a crystalline mass like brown sugar, which afforded the reactions of opium with great facility. To get the reaction with sesquichloride of iron, it is necessary to mix a drop with an excess of acetate of lead to precipitate the meconic acid, when a drop of the clear filtrate will give the blue color with the ferruginous test. There is no doubt that had the evaporation been conducted by a water bath, the result would have had but little color, and have been more decidedly crystallized. Further, there is reason to believe that the parchment paper used was not as well gelatinized as it should have been, else but little, if any, of the coloring matter of the opium would have passed. There can be but little doubt that a practical formula may be based on this process for obtaining the active matter of opium in a comparatively pure state, and the attention of the members is invited to it.

The next trial was made with calisaya bark, half an ounce of which, rubbed with two fluidounces of water, was dialysed in the same manner as the opium. The diffusate after 24 hours was nearly colorless, and had a decidedly bitter taste. It was then carefully evaporated to a syrupy consistence, and allowed to cool. By this treatment a little coloring matter separated, leaving a transparent, syrupy, very bitter, straw colored liquid, which, when mixed with a few drops of diluted sulphuric acid, crystallized with great facility in transparent needles, and when mixed with a little acetate of ammonia a white salt instantly separated without apparent crystallization. When mixed with chlorine water, and ammonia added, no green coloration ensued, but the liquid acquired a reddish hue. When mixed, first with dilute sulphuric and then with acetic acid in excess, and tincture of iodine added, and heated till transparent, on cooling a thick red flocculent precipitate subsided without any indications of green crystals of iodosulphate of quinia.

A portion of the syrupy liquid was mixed with ether and a slight excess of ammonia added and shaken. The supernatant ethereal liquid was colorless, the substratum reddish brown and transparent, whilst between the two a precipitate of a brownish color was suspended. On evaporating the ether, a very minute portion of uncrystallizable residue, having an alkaline reaction with red litmus paper, was obtained. This, on solution in chlorine water, gave a greenish coloration with ammonia, and a reddish color with ferrocyanide of potassium followed by ammonia.

This extraordinary result, viz., the minute proportion of quinia in the diffusate, must be due either to its small per centage in the bark treated, or that quinia is a colloid substance. The very late period at which these experiments were made, just before coming from home, precludes me from going over the results, but before this paper is printed I desire the right to correct or corroborate this paragraph by another examination. The uncrystallizable, or rather very soluble, character of the result of evaporating the diffusate, together with the appearance of the crystals of the sulphate of the alkali it contained, and the large portion insoluble in ether, lead to the view of its being chiefly cinchonia.

The last drug tried was wild cherry bark. The alcoholic extract was rubbed with water and diffused into water with the expectation of getting a diffusate that would react with emulsin, and yield the hydrocyanic odor, and also decide the question whether the bitter matter of this bark is a colloid extractive, or a crystalloid bitter principle. But the experiment had to be hurried so much at the last moment that it was too unsatisfactory to bring forward in evidence.

In concluding these remarks an apology is justly due to the Association for the meagre results they offer, after retaining the subject for two years. The real reason is that they were not begun until too late to pursue them to more interesting and decisive results. As regards the applicability of dialysis as a pharmaceutical process, I believe it may be used in the case of opium and Peruvian bark, but more especially the former, in obtaining concentrated preparations of the active principles that have not been altered by chemical treatment; but further experimenting is needed.

ON SOUTHERN PRICKLY ASH BARK.

BY PROF. ROBERT BRIDGES.

Among the questions proposed during the session of the American Pharmaceutical Association for 1862 is the following: "What is the true botanical source of Southern Prickly Ash Bark;" which was accepted by Professor Thomas, and on the next meeting, at his request, "dropped for the present.' Professor Thomas had in the mean time, however, endeavored to obtain specimens for the purpose of investigation, but without apparent success. One of his friends, to whom he subsequently applied in January of this year, was enabled to obtain, at Beaufort, S. C., branches of the prickly ash and transmit them to Philadelphia, at which place they arrived a short time after Dr. Thomas' decease. On the specimens coming, with the private cabinet of their late Professor, into the possession of the College of Pharmacy of Philadelphia, the Board of Trustees of that institution requested Professor Bridges to take charge of the specimens, and transmit an answer to question eleven of 1862, to the American Pharmaceutical Association at their next meeting in September.

The specimens were collected by Mr. W. Heyser, a graduate of the School of Pharmacy, who, in an accompanying note, says, "*Aralia spinosa*, or a plant I shall call that, is very abundant on the *Sea Islands*. *Zanthoxylum Carolinianum*, called by the negroes 'toothache bush,' is also abundant. This is, I think, *Z. tricarpum* of Elliot's old botany."

That Mr. Heyser has correctly assigned the "Southern Prickly Ash" to its true botanical source, if this name be confined to the product from the continent, and not extended to that from the West India Islands, will be evident from the following observations:—Professor Asa Gray, the standard authority for North American botany, in the "Flora of North America," separates the Northern and Southern species of Zanthoxylum into two subgenera, the latter distinguished by the name Ochroxylum, and the species Carolinianum, this being the name first applied to the plant. Lam. Dic. 1786, ii. p. 40. As synonymes he gives tricarpum, Mich. Pursh. Elliot, fraxinifolium, Walter. In "The Natural History of Carolina, Florida and the Bahama Islands, by Mark Catesby, F. R. S," is a very graphic description of the "Zanthoxylum Spinosum," &c., at p. 26. "The Pelitory or Toothache Tree. This tree seldom grows above a foot in thickness, and about 16 feet high. The bark is white and very rough. The trunk and large limbs are, in a singular manner, thick set, with pyramidal-shaped protuberances pointing from the tree; at the end of every one of these there is a sharp thorn. These protuberances are of the same consistence with the bark of the tree, of various sizes, the largest being as big as walnuts. The smaller branches are beset with prickles only."

The only species with which this may be confounded is the "Z. Clava-Herculis," a native of the West India Islands. Hans Sloane (Voyage to the Islands of Madeira, &c., and Jamaica, vol. ii. p. 28,) under "xxii. Evonymo affinis Arbor Spinoso," &c., describes this species as "one of the largest and tallest trees in the Island," (Jamaica.)

"It has a gray and whitish colored bark, smooth only here and there along the trunk, having long obtuse prickles like cocks' combs; the branches are forty and more feet in height, and are all beset with short crooked prickles."

James Macfadyen (The Flora of Jamaica) gives, with the exception of the size of the tree, a similar description,—"stem erect, armed with numerous strong, thick spines or prickles; branches spreading, thorny." From these accounts there are no means of distinguishing the two species in the absence of the leaves; and as these, from the branches being collected in January, did not accompany the specimen, it is necessary to seek further for distinguishing marks. In the "Histoire Naturelle des Vegetaux, par M. Edouard Spach, vol. ii. p. 365, these two species are described as follows:

"Z. Clava-Herculis. Aiguillons courts, geminees, enlargis a la base.

"Z. tricarpum, Mich. Catesby, t. 26. Branches elatées armées des nombreux aiguillons tres-pointus, fortement dilates a la base, atteignant quelques fois une pouce de diametre."

Dr. Julius Martigny and also Mr. J. Dyson Perrins, speaking of the bark of Clava-Herculis, describe it as peculiar from its highly laminated structure, splitting up like bast. We have here then two characters in Clava-Herculis not to be found in Carolinianum, viz., "aiguillons geminees" and a bast-like structure of the bark; and if we have in addition the locality from which the bark has been derived, a correct opinion of the botanical source may be formed, there being no evidence that Clava-Herculis is a native of the continent, or Carolinianum of the islands. In relation to Clava-Herculis, Elliot expressly states, "With this species I am entirely unacquainted. Does it not really belong to the West Indies? The Hercules club of our negroes and countrymen is, as far as I have been able to ascertain, the Aralia Spinosa."

The specimens sent by Mr. Heyser, and portions of bark (derived partly from an older tree) in the cabinet of the College, agree so well with the characters given by Catesby and Sloane, that but few additional remarks are required. The Beaufort specimens consist of branches varying from three inches to three lines in diameter. The bark adheres strongly to the wood, is thin and brittle, and the protuberances on the large branches are surmounted by the remains of the thorns. The thorns on the young branches are of a brown color, shining, very sharp, mostly straight, with a large base. On the large branches they appear weathered, having lost their color, polish and acuteness. In the bark of greater age, the spines are lost and the protuberances alone remain. These appear to be formed of successive annual layers of corky substance, gradually increasing in diameter towards the base, which is sometimes nearly diamond-shaped, the longest diameter most usually longitudinal to the branches, but occasionally transverse. In thickness the bark (College specimen) varies from that of writing paper to one-sixth of an inch. Its pungency is greater than that of the Northern prickly ash.

VOLUNTEER REPORTS AND ESSAYS.

A SYSTEMATIC COURSE OF STUDY AND MANIPULATION FOR STUDENTS OF PHARMACY.

BY EDWARD PARRISH.

The great educational want among pharmaceutists, is systematic instruction. We take young men into our shops ostensibly to qualify them for conducting the business of pharmaceutists. We put them first at the bottom of the ladder, which usually means sweeping out the shop, opening and shutting it, running of errands, cleaning the mortars, graduated glasses and ointment slabs, pounding substances in the contusing mortar and cutting labels. All these operations are persistently thrust upon the youngest apprentice by those who, having got above such duties themselves, consider them very important to all who are still on the bottom round of the ladder. These rudiments passed, the lad gets from the sink to the counter, and learns weighing and folding packages and filling and labelling vials; he looks over the mysterious prescriptions, which he gradually learns to decipher; he finds the meaning of the Latin labels on the shop drawers, or rather, the relation between these and the English labels used in dispensing; begins to find the difference between Epsom salts and alum, knows oil of vitriol from turpentine, rhubarb from gentian and mustard seed from cardamom. After a year or two of probation, he has learned to wait on customers; he knows the prices of the patent medicines, the lozenges and hair tonics, can sell most of the common drugs and preparations, and compound ordinary prescriptions. He now begins to learn something of the properties of medicines, makes the tinctures and syrups, and, by the time the four years of his apprenticeship have passed over, he is deemed competent to take charge of a business.

If so fortunate as to be within reach of a college of pharmacy, or to have a faithful and scientific instructor, this routine knowledge of the shop is finished and rounded off, during the last year or two, by a certain amount of scientific training, which, with his experience in the shop, forms a fitting preparation for the duties of his profession. But if, as in the vast majority of instances, the apprentice is wholly dependent on what he can pick up in his daily routine, the chances are against his ever advancing beyond the mere tradesman—successful enough, perhaps, in making money, but beneath the true pharmaceutical status and, all his life, falling short of the high requirements of his profession.

If a man should turn his child, at the age of ten or twelve years, into a school in which the time of the teacher was altogether taken up with his or her own concerns, in which there was no definite order of study arranged, no lessons given out, no recitations required, each pupil being allowed to pick up the first book that presented, whether the Iliad or a primer, the multiplication table or Euclid, of what avail would be the best library, the most complete arrangements or the longest term of study? No reasonable prospect of success could be entertained.

How then can we expect a pharmaceutical aspirant to pick up, in the wilderness of a drug store, a systematic knowledge of the sciences essential to the due prosecution of the profession of his choice? The application of the powers of observation and comparison to the study of drugs, is a simple and obvious feature of daily practice; this is less subject to the necessity of classification than either of the other branches of his study, and yet, even here, he will find method a great assistance.

The study of chemistry as a science is now happily introduced, to some extent, into every Academy, and even into most common schools; and a clue to the proper order of its study is found in so many books within convenient reach, that I need only refer to these. To the beginner, the simple course of inductive experiment indicated in Stockhart's Chemistry is, perhaps, the best, and the leisure hours of the apprentice might be improved, with the countenance of his employer, by making, according to the simple processes there given, the most important elementary substances and a few of their compounds. Such a course of experiment would not only improve the student in manipulation,—a great advantage to his employer as well as himself,—but would give an insight into chemical science to be obtained in no other way. To have isolated oxygen, hydrogen and chlorine, and made some of their leading compounds for himself, is worth far more to a lad commencing the study of chemistry, and perhaps even to his employer, than all the apparatus his first bungling may have broken, and all the time it may have taken from the ordinary drudgery of the shop. A short series of chemical experiments will lighten his toil for months, and, if he be a lad of ambition and of spirit, they will not fail to fire him with a zeal pregnant of further attainments in science.

In the arrangement of inorganic salts used in medicine I have adopted a routine in my Treatise on Pharmacy especially adapted to the wants of a pharmaceutical student. Starting with the raw materials, I have indicated in each syllabus the order in which the salts are most naturally produced. A student, for instance, who will begin with some iron filings and sulphuric acid, may produce a long series of salts, without resort to any other than the ordinary cheap apparatus and chemicals surrounding him in the shop. When he has learned their modes of preparation and properties in this way, he will know them more thoroughly than he could by any amount of study apart from the actual experiment.

It was not, however, with a view to chemistry or materia medica, properly so called, that I took the pen to indicate a systematic course of study and practice, but with reference to pharmacy,—the practical part of our business,—that towards which our other studies as pharmaceutists must tend. In teaching pharmacy practically and systematically, I claim to have some experience, having maintained a practical school for instruction in this branch for fifteen years, during which time I have taught nearly five hundred students, more or less completely, the elements of this art.

The course is arranged to suit medical students, whose time is very limited during the crowded period of attendance on lectures in the medical colleges, and whose needs only extend to such a presentation of the subject as will prepare them for the duties of the dispensing office. The great utility to this class of a systematic course of instruction in pharmacy is universally conceded by professors in the medical schools and by private preceptors who have the training of the students, so that little difficulty has been experienced in obtaining from the start the required number to fill up the necessarily limited classes. Pharmaceutical students from the class of the Philadelphia College of Pharmacy have also participated in the instructions, and from these the assistants and superintendents of the practical department have been selected. The classes have varied from four to thirty-five students; the fee for the course of twenty-six lectures and twenty-three practising lessons has been $15. A room has been appropriated to the school capable of seating the whole class for lecture, and accommodating at the counter for practice, from four to six students at one time. The ordinary apparatus of a drug store and the drugs entering into the officinal preparations were provided; a hydrant and sink, several gas furnaces and a sand bath on the stove, also a drug mill and series of sieves have served useful purposes.

The course has continued from thirteen to fifteen weeks, the lectures occurring twice weekly, and each student coming twice a week to practice for an hour and a half. Four students, which is found to be as many as can profitably work together at one time, are formed into a practising class, the social affinities, as well as the hours of meeting most convenient to the members determining this organization. At the meetings for practice some of the exercises are adapted to being practiced by all the class at once, but most are allotted to a single student, whose manipulations are inspected and sometimes assisted by the other members. The first arriving, takes the manipulation marked A in the syllabus, the second, B, and so on; but the first manipulation is to be fairly begun before the second is started, and so on, each student being compelled to watch the operations of the others and to become as familiar with them as with that specially allotted to himself; in this way each of the four students acquires a knowledge of the entire series of processes practiced by the class, and learns, perhaps, four times as much as if he practiced alone. The Queries propounded for answer, and the minutes of the meetings detailing all the manipulations and results, and read at the beginning and close of each meeting, add greatly to the completeness of the instruction.

Perfection has been the aim in all our preparations, and, under the strict supervision kept over the manipulations of the students, many of whom on entering the school were entirely unacquainted with pharmacy, it is believed that the quality of their preparations has been rather above than below the average of reputable stores. As but small quantities need be prepared by the students for the purposes of instruction, and as those most in use are the most important for them to become acquainted with, nearly the whole product of the school, with the exception of the infusions and a few of the extemporaneous preparations, have been utilized in our business or bestowed upon charitable institutions, where they have not been wasted.

It will be seen that this is an important feature of the scheme. A chemical laboratory for instruction is costly, because of the large amount of material used and wasted in analyses and in unproductive processes; but a school of the kind herein described is economical, the material consumed is returned in reliable pharmaceutical preparations, and nothing is to be charged to the expense account but the rent, the time and attention bestowed, the small incidental waste of material, and the breakage and wear and tear of apparatus.

By the syllabus which follows, the order of treating the subjects in the lectures and of the manipulations in the practising course are sufficiently indicated, and the mode of presenting them may be inferred from the study of my Treatise on Pharmacy, which was originally devised as a text-book for this course. To enterprising and intelligent pharmaceutists residing within reach of the students of medical colleges, I would recommend the establishment of schools of practical pharmacy, somewhat on the plan here indicated. It is a field of enterprise which can hardly fail to yield ample returns to the teacher as well as to the pupils. Pecuniary advantages should not be the chief motive: they are rather incidental than direct results. It is a well recognized fact, that the best way to become proficient in any art or science is to teach it; and the pharmaceutist who will persevere in teaching classes of intelligent young men the theory and practice of pharmacy, will soon be on the high road to unusual proficiency and a corresponding reputation, while his assistants and the young men in drug stores within his reach may enjoy advantages of systematic education now nowhere accessible except in the few colleges of pharmacy in the cities of Philadelphia, New York and Baltimore. The rules of these colleges require attendance upon two full courses of lectures and an apprenticeship of four years in a drug and pharmaceutical store. One full course would be made up by attendance upon the lectures on materia medica and on chemistry in a medical college, and the instructions in pharmacy obtainable in such a school as I now refer to; thus the way would be opened to many students throughout the country to become graduates in pharmacy by attendance upon one course only in the degree-conferring colleges, involving an absence from home of only six months, instead of twelve or eighteen months as is now generally required.

The Syllabus is not only adapted to schools of pharmacy such as that for which it was designed and has served so well, but may be used by isolated students who will study the subjects indicated in the order in which they occur, and adapt the course of practice as far as is compatible with the convenience of their employers to the ordinary work of the shop. To several young men desiring to pursue the course without a teacher, I would recommend stated times for meeting, for what is technically called by students in the colleges *a quiz*. Let them then compare experiences, exhibit their products and assist each other in cases of difficulty.

The remarks I have here made in the interest of pharmaceutical education may be little regarded by some, but they are made advisedly; and an extensive correspondence with young men struggling to attain a scientific acquaintance with their profession, lead me to hope they may not be in vain.

SYLLABUS OF COURSE OF STUDY AND MANIPULATION.

I. *On the Pharmacopœia.**

Origin, History and Authority of the U. S. P. Its decennial revisions.

Arrangement and Division into the *List*, and the *Preparations*. The *List*. Its divisions into Primary and Secondary. The *Preparations*. General Observations on the Formulæ.

The Officinal Nomenclature. Simple, Expressive, Distinctive and Convenient. General principles on which it is arranged.

Observations on the use of Synonyms and English names, &c. The term *Officinal*. Its general and special applications.

II. *Metrology.*†

The Science of Weighing. Weight, the gravitating force of any substance, expressed by some known standard—these standards are called Weights. Origin of terms pennyweight and grain, and of the different standards.

The knowledge of the Officinal weight, and the difference between it and the Commercial of the utmost importance to the student. The different tables of Weight exhibited and recapitulated.

The distinction between the sign ℥j. = the Officinal troyounce of 480 grs., and 1 oz. = the commercial ounce of 437·5 grs.

Liquids are measured by standards of bulk or capacity. The tables of Liquid Measure.

The difference between minims and drops. Number of drops in a fluiddrachm of distilled water. Difference according to the lip of the vial.

Observations on Balances.—How to adjust and use them. The process of Weighing. Measures.—The best Shapes and materials considered. How tested. How graduated. How used. Approximate measurement.

III. *Vegetable Medicines.*‡

(Sometimes extended to several Lectures.)

Proximate principles of plants.

Lignin.—Ultimate constitution $C_{24}H_{20}O_{20}$, Inert, Insoluble. Cotton, Gossypium U. S. P. Gun-Cotton and Collodion. Lint from Linen. Conversion of Lignin into Starch, &c.

Starch.—Ultimate constitution, $C_{24}H_{20}$, O_{20} Physical condition as small sacs containing gummy matter. Soluble in hot water. Pearl Barley, Tapioca, Sago, &c., exhibited. Also, Roots of Colombo, Sarsaparilla and other starchy roots. Lichenin from Cetraria. Carrageenin from Chondrus. Test for Starch—Iodine.

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* See "Parrish's Pharmacy," part 1, chapt. ii.

† See "Parrish's Pharmacy," part 1, chapt. iii. U. S. Dispensatory appendix, iii.

‡ See "Parrish's Pharmacy," part iv., third edition, part iii., previous editions.

Gum.—Two kinds—Soluble and Insoluble—Arabin, Bassorin. Ultimate Constitution of Arabin, $C_{24}\ H_{22}\ O_{22}$. Flax-seed, Quince-seed, Elm Bark, Althea, &c., exhibited. Gum precipitated by $2PbO, \overline{Ac}$. Observations on Cataplasms.

Sugar.—Ultimate Composition, $C_{24}\ H_{18}\ O_{18}$. Cryst. $C_{24}\ H_{22}\ O_{22}$. Cane and Grape, and numerous other sugars. Glycyrrhizin. Liquorice. Conversion of Starch into Sugar.

Volatile Oils.—Three classes—1st C.H.; 2d C.H.O.; 3d contain Sulphur. Proximate Constituents—Elæopten and Stearopten.

Reaction of Amygdalin and Emulsin. Wild Cherry, Bitter Almond, &c.

Sulphuretted oils of Black Mustard, Garlic and Assafœtida. Oils of Cinnamon, Cloves, Aniseed and other oxygenated oils examined.

Resins.—Some formed by the oxidation of Volatile Oils. Varieties, Properties, &c. Turpentine, Resin, Copal, Mastich, Jalapin, Podophyllin, &c., examined.

Gum-Resins. Oleo-Resins.

Balsams. Benzoic and Cinnamic Acids.

Fixed Oils.—Stearin, Margarin and Olein. Suet. Lard. Castor Oil, Croton Oil, &c., examined.

Vegetable Acids.—Neutral Principles. Alkaloids. "Extractive."

Vegetable Albumen, Chlorophylle, &c.

Inorganic Salts. Parts of plants in which these principles are found most characteristically, and their relations to Vegetable Physiology.

IV. *Desiccation, Comminution and Pulverization.*

1. The Collection of Plants.—Roots: annual, biennial, perennial.

Treatment of Succulent Roots.—Taraxacum, &c.

Barks, Leaves, Flowers and Seeds.—When collected and how dried.

Herbs.—Use of the term—mode of preparing and garbling them.

2. Drying by natural and artificial heat.

Influence of sun's ray.

Loss of weight by drying. Remarkable instances.

The "Shaker" settlements—Their arrangements—The character of their herbs.

Influence of climate and soil on the physical and chemical character of plants.

The Garbling of Drugs.

First Meeting for Practice.

By the Class.

1. Cutting Papers.—The double-medium sheet, 38 by 24½ inches, cut into 2 single sheets 24½ in. by 19 in.; cut into 4 ½lb papers, 12 in. by 9½ in.; cut into 6 4 oz. papers, 9½ in. by 8 in.; cut into 12 1 oz. papers, 6 in. square.

The flat cap sheet cut into 16 small powder papers and 9 larger papers, (Seidlitz size.)*

2. Folding packages of 4 oz. Epsom salts and 1 oz. Epsom salts, and tieing them.

A, 1. Make—Pulvis Ipecacuanhæ Compositus ʒx. U.S.P.

2. Dispense, for John Smith.

℞.—Pulveris ipecacuanhæ comp. ʒss.
In chart iij. dividenda. Label.

Let each of the class have a hand in triturating the above.

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* See Parrish's Pharmacy, 3d edition, p. 792.

Apparatus for comminution* on a large scale.
  Mortars for contusion and trituration.
  Drug Mills — Slicing knives and Shears.
Manipulation with Mortars.
Sifting.—How to regulate the fineness of the powder by manipulation.
  Soft substances powdered on a sieve.
Powdering by mediation.—Camphor, Phosphorus, &c.
  By precipitation. By granulation.
  Powdering of Nux vomica, Tragacanth, Salep, Squill, Assafœtida.
Elutriation and Levigation.—Prepared chalk and oyster shell. Granulation of metals.
Remarks on Powders as a class of preparations. Different degrees of fineness.
  Liability to adulteration.
  Effect of light on powders.
Substances given in large doses generally unsuited to this form. How suspended in water.
  Deliquescent, very bitter and nauseous substances objectionable in powder.
  Mode of administering heavy powders.
  Officinal class Pulveres — Syllabus studied—Doses, &c.
  Extemporaneous Prescriptions—Dilution of powerful substances with sugar, gum and other excipients.
  Seidlitz and soda powders, their composition and uses.

V. *Of Solution.*

1. Solutions of two kinds.

Solution proper,—in which the attraction of aggregation in a solid body is overcome by contact with a liquid, in this case called a solvent. Water is the great natural solvent.

The term "soluble" used approximately—Few substances quite insoluble—How to determine solubility—Influence of temperature on solubility—of the state of division—of the position of the solid in the liquid.

Solution on a large scale in the arts.

The use of the Mortar and Pestle in

Quere. How many grains of opium and of ipecacuanha in each powder?

B, 1. Make—Pulvis Jalapæ Compositus. ʒiij. U.S.P.
  2. Dispense for Louisa Smith.
℞.—Pulveris Jalapæ Compositus, ʒiss.
  In chartulas iij. dividendus. Label.

C, 1. Make—
  Pulvis Aloes et Canellæ, U.S.P.
Quere, What is its dose? and how is it given?
  2. For Lewis Jones.
℞.—Hydrarg. Chlorid. Mitis..gr. i.
  Sacchari ....gr. xj.
M. ft. pulvis et in chartulas xij. dividendus.
Quere, What is the object of using sugar?
  How often should these powders be given for producing salivation?
  What might be added to prevent their purging?

D, 1. Make—
  Pulvis Aromaticus, ʒvj. U.S.P.
  2. Dispense—
  For Little John (age 8 years.)
℞.—Ferri Subcarbonatis,...... ʒj.
  Sacchari,..................... ℈ij.
  Pulv. Aromatici,........... ℈j.
Misce fiat pulvis, in chart. xij. divid.
Quere, How much carbonate of iron in each powder?

Substitutes or further Preparations.

Prepare Pulveres Effervescentes, U. S. P., and Pulveres Effervescentes Aperientes, U.S.P.

Second Meeting.

By all the Class.
Practising in folding packages, &c.

A, 1. Make—
Liq. Morphiæ Sulphatis, f℥j. (U.S.P.)
Label, Solution of Sulphate of Morphia.
Quere. What proportion of Sulphate of Morphia is in each teaspoonful?

2. Or make—
Liquor Potassæ Carbonatis, f℥iss. (U.S.P., 1850.)
Label, Solution of Carbonate of Potassa.

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* See Mohr, Redwood and Procter's Pharmacy, Chap. V.

making solutions—the liquid successively added and poured off—Cold produced by solution.

Filtration and Decantation.

2. Second kind of Solutions.

The extraction from a compound body (especially organic) of its soluble principles by a liquid; in this case called the Menstruum.

This kind of solution extensively employed in the preparation of medicines, and a knowledge of its details important.

We postpone these till after presenting some solutions of the first class.

Distinction between the officinal classes—Liquores and Aquæ.

Instances of Simple Solution. Many substances obtained in solution by chemical processes, not soluble by contact of the salt with water, as citrate of magnesia, and many directed to be made from the materials which, by double decomposition, yield the salt required.

Relation of this branch of the subject to the chemical course. Medicinal Waters (Aquæ, U.S.P.) made from Essential Oils by the use of an insoluble intermediate body, or by distillation from the aromatic drug.

Remarks on the mode of preparation, properties and uses of these, which may be studied in detail in the Pharmacopœia and Dispensatory, and in Syllabi in Parrish's Pharmacy.

VI. *On Maceration and the Infusions.*

The second class of solutions defined again.

Observations on Pharmaceutical Solvents or Menstruæ—Their powers and uses.

1. Water. 2. Alcohol. 3. Wine. 4. Ether. 5. Vinegar. 6. Fixed Oils. 7. Vol. Oils. 8. Alkalies.

Processes of extraction treated in the following order:

1. Maceration or cold infusion. 2. Digestion or hot infusion. 3. Percolation. 4. Decoction.

Suitable vessels for use—Squires' Infusion Mug, &c.

Proper degree of bruising of the drug.

Quere, What is the dose? and what are the uses of the solution?
What proportion does the solution bear to the quantity of water used?

B, 1. Make—
Liquor Iodinii Compositus, f℥j (U.S.P.)
Label, Lugol's Solution of Iodine.

Quere, What is the dose of this?
What class of diseases is it adapted to?

Or make—
Liq. Hydrarg. et Arsen. Iodidi, U.S.P.
Label, Donovan's Solution.

Quere, What are the salts formed of the mixed ingredients?
What are the medicinal properties of the solution and its dose?

C and D, Make—
Aqua Camphoræ, Oj. (U.S.P.)
Label, Camphor Water.

Quere, What proportion of camphor is designed to be dissolved in each f℥j?
What is the use of the magnesia and of the alcohol?

Or make one of the following:
Aqua Amygdalæ Amaræ.
" Cinnamomi.
" Fœniculi.
" Menthæ Piperitæ.
" Menthæ Viridis.

Quere, How many drops and how many minims of the oils are in each f℥j. of the water?

By all the Class.
Folding plain and plaited filters.

Third Meeting.

A. Prepare and dispense as follows:

For J. Jones.
℞.—Magnesiæ Sulphatis......℥j.
Acidi Sulph. Arom.......f℥j.
Aquæ.........................f℥iiiss.
Fiat solutio.

Sig.—Take a tablespoonful every 2 hours till it operates.

Quere, How many hours will it require to take the whole ounce of the salt? and how much will be in each dose?

B. Prepare—
Liquor Ammoniæ Acetatis, U.S.P.

Quere, What are the uses of this remedy?
What is its dose?

Remarks on the officinal Infusa—study Syllabi in "Parrish's Pharmacy."

Remarks on the several classes.

Dose of infusions generally f℥ij.—some are given *ad libitum*. Exceptions to the usual dose, Infusum Digitalis and Infusum Capsici. The dose of these fʒj. to f℥ss.

Infusions generally spoil in a few days. Exceptions, Infusum Digitalis and Infusum Gentianæ Comp. Both contain a small quantity of alcohol.

The Infusions of Wild Cherry and Ginger more permanent than the others, from the antiseptic constituents they naturally contain.

VII. *On Percolation or Displacement.*

The neatest, most rapid and productive process for extracting the soluble principles from vegetable substances.

History of its invention in 1833—Its introduction in the U. S. by Duhamel in 1838, &c.

The forms of Displacement Apparatus—Of Tin—Glass—Porcelain—Wood, &c.

The use of the common funnel—The two Diaphragms—How substituted.

The Ethereal and the Steam Percolators.

Headings for Studying the Process.

Fineness of the Powder.

Moistening and Packing of the Powder.

Rapidity of the Process—drop by drop.

Repassing the liquid; it must pass clear.

The last portions without color or taste.

Treatment of Gum Resins, &c., admixed with sand.

Continuous Displacement.

VIII. *On Tinctures.*

Alcoholic solutions, generally prepared by maceration or percolation.

Alcohol, U.S.P. Spirit of the sp. gr. 0·835.

Colorless, wholly vaporizable, unites with water and ether in all proportions. Diluted with 20 parts of pure water, should yield no foreign odor.

Alcohol Dilutum, U.S.P. Alcohol

C. Prepare—
Liquor Magnesiæ Citratis, f℥xij., U.S.P.

Quere. What quantity of the salt is contained in a bottle? What are its properties in full dose and in small doses?

D. Prepare—
Liquor Potassæ Citratis, U.S.P., or Mistura Potassæ Citratis, U.S.P., or Effervescing draught. See Parrish's Pharmacy, 3d edition, p. 737.

Quere, What are the uses and relative advantages of these?

Fourth Meeting.

A. Prepare some of the infusions made by maceration with hot water. Such as—
Infusum Eupatorii, Buchu, Sennæ, Serpentariæ, Valerianæ, Zingiberis, Lini Compositum, Digitalis.

B. Prepare, by percolation,—
Infusum Cinchonæ Flavæ, U.S.P.
Or Infusum Cinchonæ Rubræ.

Quere, How much quinia in each pint of the former?
Is this preparation adapted to use as an antiperiodic?

C. Prepare,—
Infusum Pruni Virginianæ, U.S.P.

Quere, What are the medical properties of this?
To what are its sedative properties due?

D. Prepare—
Infusum Quassiæ,
Or Infusum Calumbæ.
Or Mucilago Sassafras, by maceration.
Or Infusum Gentianæ Compositum, by percolation.

Fifth Meeting.

A. Prepare—
Tinctura Aconiti Folii, or
" Belladonnæ, or
" Conii, or
" Hyoscyami, or
" Digitalis, or other tincture made from dried leaves.

B. Prepare—

mixed with an equal measure of pure water ; sp. gr. 0·941, similar to proof spirit used in England.

Adaptations of Alcohol to use as a solvent and as an antiseptic.

In Infusum Gentianæ Compositum and Tinctura Aloes it is weaker; and in Tinctura Kino, Tinctura Cinnamomi and Tinctura Arnicæ it is stronger than officinal diluted alcohol—Most Tinctures are made with diluted alcohol—The group of Resinous Tinctures and some very strong Tinctures are made with alcohol of sp. gr. ·835.

Study Syllabi in Parrish's Pharmacy—Group 1st.

Remarks on Narcotics—Uses of these in practice—General limit of doses, &c.

IX. *Tinctures* (Continued.)

Mode of classifying and studying these. See Groups 3d to 5th, "Parrish's Pharmacy."

Made with diluted Alcohol. Solutions of Salts of Iron blacken most vegetable tinctures from their containing Tannic Acid—Use of Astringent and Tonic Tinctures—Of Stimulant Tinctures—Of Cathartic and Stomachic Tinctures.

Disadvantage of habitual use of these in chronic cases.

Their adaptation to extemporaneous combinations.

X. *Tinctures made with strong Alcohol.*

Group 2d. Parrish's Pharmacy.—Saturated Tinctures made with strong Alcohol—Dangerous in over dose—Distinction between Nervous Sedatives, Nervous Stimulants and Excito-Motor Stimulants. Anti-spasmodics and Narcotics.

Object of employing strong Alcohol as a menstruum for this group. Necessity for great care in percolation, repassing the first portion of menstruum.

Group 6th.—Resinous Tinctures—Incompatible with water and saline solutions—Suspended by Mucilage—Their physical and medical properties and uses—Tincture of Tolu and Tincture of Ginger used in the preparation of the Syrups—Tincture of Guaiacum administered in milk.

Tinctura Stramonii, or
" Colchici, or
" Gallæ, or
" Cubebæ.

C. Prepare—
Tinctura Sanguinariæ, or
" Scillæ, or
" Krameriæ, or
" Capsici, or
" Cantharidis.

D. Prepare—
Tinctura Kino, or
" Catechu, or
" Aloes, or
Acidum Sulphuricum Aromaticum.

Quere, What are the doses, properties and uses of the Tinctures you have prepared ?

Sixth Meeting.

Each student prepares an appropriate tincture by percolation, varying from the practice of the last meeting and including examples of the Tonic, Astringent, Aromatic and Cathartic Tinctures made with diluted alcohol. Let every precaution be enforced to secure perfect results, and be sure in each case that the last portion comes through the funnel without odor or taste.

Queries. What are the doses, properties, &c. of the respective tinctures prepared ?

Seventh Meeting.

A. Prepare—
Tinctura Aconiti Radicis, or
" Nucis Vomicæ, or
" Veratri Viridis, or
" Zingiberis, by percolation.

B. Prepare—
Tinctura Cannabis, by trituration, or
" Assafœtidæ, or
" Tolutani, or
" Benzoini Comp., or
" Castorei, by maceration.

C. Prepare—
Tinctura Myrrhæ, or
" Aloes et Myrrhæ, or
" Guaici, or
" Lupulinæ, or
other resinous Tinctures, by percolation or maceration.

Group 7th.—Made with Aromatic Spirit of Ammonia—Its advantages as a menstruum and therapeutically—its diffusible character adapts it to use with antispasmodic remedies.

XI. *Vina, Aceta. Some spirits and Liniments.*

Vina.—Mostly made by percolation with Sherry Wine—Vinum Antimonii by trituration and solution—Use of Wine as a menstruum—Not so stimulating as diluted Alcohol—Wines less permanent than Tinctures.

Tinctura Ferri Chloridi—Tinctura Iodinii—Tinctura Iodinii Composita, properly classified among chemical preparations.

Aceta.—Made from diluted Acetic Acid—The advantages of the menstruum—Combines with and fixes organic alkaloids—Not stimulating as alcohol—Refrigerant.

Of the class *Spiritus*—Some are prepared by distillation, some by solution of Essential Oils and some are chemical preparations. Spiritus Camphoræ, formerly named Tinctura Camphoræ—used externally and internally—Spiritus Lavandulæ Compositus—process for its preparation and use as a remedy and adjuvant—The term Essence—Its use and abuse.

Linimentum Saponis essentially a Tincture—Formerly so designated.

XII. *Preparations of Opium.*

Opium, its source, commercial history, physical properties and chemical constituents.

Therapeutical effects as used singly and in combination.

The alkaloids—their separate characteristics and effects.

Syllabus of its Galenical preparations in the text book.

XIII. *The Generation and Application of Heat and Decoctions.*

Furnaces, permanent and moveable—Advantages of draft—Use of stove, lamps, &c.—Alcohol as a fuel.

Gas furnaces--Forms various--Their *rationalé*, use, &c.

Sand bath and water bath—Adaptation and uses—Steam heating appa-

D. Prepare—
Tinctura Guaiaci Ammoniata, or
“ Valerianæ Ammoniata in covered percolator.

Queries upon the preparation, uses and doses of these tinctures.

Eighth Meeting.

A. Prepare—
Vinum Colchici Radicis, or
“ Ergotæ, or
“ Ipecacuanhæ, or
“ Rhei, or
Acetum Colchici, or
“ Sanguinariæ, or
“ Lobeliæ, or
“ Scillæ, by percolation.

B. Prepare—
Vinum Aloes, or
“ Colchici Seminis, or
Spiritus Camphoræ, or
Linimentum Camphoræ, by maceration.

C. Prepare—
Linimentum Saponis, or
“ Cantharidis, by digestion on a water bath.

D. Prepare—
Tinctura Iodinii Composita,
“ Iodinii, by solution in a mortar.

Queries on the preparation and uses of all these; the nature and adaptations of the several menstrua.

Ninth Meeting.

A. Prepare Tinct. Opii Camphorata.
B. “ Tinctura Opii.
C. “ “ Opii deodorata.
D. “ Vinum Opii, or
Tinctura Opii Acetata, or
Acetum Opii.

Queries upon the doses, properties and uses of each.

Tenth Meeting.

Filtration and completion of unfinished preparations, each of which has been labelled at a previous meeting, with date and name of the student having it in charge.

Each should be carefully examined; its taste, color and other properties observed; and a general review of ratus for large operations—Heating power according to pressure.

Processes requiring heat.

Decocta.—Syllabus in Parrish's Pharmacy.

Merits and demerits of the process of decoction, and uses of the several officinal decocta.

XIV. *Evaporation and the Extracts.*

Process of evaporation—Shape of vessels—Importance of stirring, draft of air, &c.—Regulation of heat—Water bath usually directed—Spontaneous evaporation where very volatile menstrua are used—Use of steam heat and vacuum apparatus on a large scale—Recovery of evaporated menstruum.

Insoluble apotheme — Uncertain strength of commercial extracts — Proper consistence of extracts—Toughness, how obviated—Softness of extracts—Danger of pushing inspissation too far.

Syllabus of officinal extracts.

Inspissated juices, Alcoholic, Aqueous and Acetic Extracts.

See Syllabus and comments in Parrish's Pharmacy.

XV. *Fluid Extracts.*

Full discussion of the modes of extraction and concentration of this class of liquid preparations — The strength of these—Relations of dose to the dose of the drug.

Exceptions to the usual strength, Fluid Extracts of Cinchona and Wild Cherry Bark.

XVI. *Syrups.*

Use of sugar as the vehicle for medicinal preparations—Proportion requisite to make permanent syrups.

Alcohol and Acetic Acid used in preparation of some—How and why.

Use and abuse of boiling temperature in making syrups.

Simple Syrup and the first Group in Parrish's Pharmacy.

Preparation, uses, &c.

XVII. *Syrups—Honeys.*

The remaining Syrups and *Mellita* considered in detail, with reference to Syllabi.

each class, upon doses, modes of preparation, &c.

A. or B. Prepare Decoctum Hordei.

C. or D. Prepare Decoctum Sarsaparillæ Comp., or other officinal decoctions.

Eleventh Meeting.

A. Commence preparation of—
Ext. Sennæ Fluidum, or
Ext. Sarsaparillæ Fluidum, or
Ext. Spigeliæ Fluidum.

B. Commence preparation of—
Ext. Buchu Fluidum, or
Ext. Hyosciami Fluidum, or
Ext. Valerianæ Fluidum.

C. Commence preparation of—
Ext. Cinchonæ Fluidum,
Ext. Gentianæ Fluidum,
Ext. Serpentariæ Fluidum.

D. Commence preparation of—
Ext. Ipecacuanhæ Fluidum.

The extraction of the drugs by the menstruum, by percolation, will require attention in the interim, labelling the preparations with clear directions will be necessary to prevent mistakes.

Twelfth Meeting.

Finish foregoing preparations, *Secundum Artem.*

Query as to doses, uses, rationale of mode of preparation, &c.

Commence, if time allows,
Syrupus Pruni Virginianæ, or
Syrupus Rhei Aromaticus.

Thirteenth Meeting.

A. Prepare Syrupus (Simple Syrup.)
B. " Syrupus Ipecacuanhæ,
Commence Syrupus Senegæ.

C. Prepare—
Syrupus Pruni Virginianæ, or
Syrupus Rhei Aromat.

D. Prepare—
Syrupus Tolutanus, or
Syrupus Zingiberis.

Fourteenth Meeting.

A. Finish foregoing. Commence Syr. Sarsaparillæ Compositus.

Use of antiseptic ingredients—Essential Oils — Aromatics — Brandy — Glycerin, &c.

Proper preservation of syrups.

Glyceroles—Cordials—Elixirs, &c.

XVIII. *Confections, Lozenges, &c.*

The subject studied as treated in the text-book, with reference to the eligibility of these forms of preparation for the use of children. Medicines adapted to either form should be confined to those which are either agreeable or nearly tasteless.

XIX. *Prescriptions.*

Remarks on the language employed in prescriptions. On officinal names.

Grammatical construction of the Latin prescription. — See Parrish's Pharmacy, 3d ed., p. 684, and Thomas' Pronouncing Medical Dictionary, p. 660.

Remarks on Abbreviations. —On symbols and signs used in prescriptions.

Division of the Prescription : 1, the superscription ; 2, the inscription ; 3, the subscription ; 4, the signature.

Rules for apportioning quantities.

Arrangement of the ingredients ; 1, the basis ; 2, the adjuvant ; 3, the corrective ; 4, the excipient ; 5, the diluent.

These remarks, though especially appropriate to the student of medicine, are applicable to the pharmaceutist, who should be thoroughly acquainted with the art of constructing formulas, as well as of compounding their ingredients.

The ethics of prescribing and compounding.—Relations of physician and pharmaceutist.—Accidental errors in writing, in compounding, and dispensing.

Comparison between powders and solutions ; the substances most appropriate to each form, and the adaptations of each form to use in practice.

XX. *Pills.*

The most convenient form of medicine in a majority of cases.

Medicines more accurately divided in this form than when dependent on approximate measurement. Perma-

B. Prepare Syrupus Acidi Citrici, or Syrupus Acaciæ.

C. Prepare Syrupus Scillæ from Acetum Scillæ previously prepared. Commence Syr. Scillæ Compositus.

D. Commence Syrupus Krameriæ.

Fifteenth Meeting.

Finish and review the Syrups previously commenced.

Make Confectio Aurantii, or
Confectio Aromatica.

Make Trochisci Ferri Carbonatis, or other Lozenges.

Sixteenth Meeting.

The class, if composed of medical students, is exercised in the writing of prescriptions. Each presents a variety of original prescriptions for criticism and correction.

If composed of pharmaceutical students, the class is exercised in reading obscure and difficult prescriptions from the files of the shop. A variety of synonyms of common medicines are introduced, and the incompatibles are pointed out.

From the prescriptions presented, suitable powders and solutions are compounded, one by each of the class, the minutes of the second and third meetings being read.

The following may be prepared :

A. Pulvis Rhei Compositus, U. S. P.

B. ℞ Hydrarg. Chloridi Mitis. gr. xv.
Pulveris Jalapæ, ℈j.
Misce.

C. Aqua Creasoti, U. S. P.
Quere, What is the use of this?

D. Extemporaneous solution of Acetate of Potassa.

℞. Acidi Acetici,... fʒvj.
Aquæ .... f℥iij.
Potassæ Bicarb., ʒiijss. or q. s.
Form a neutral solution.
Sig.—Dose, a teaspoonful.

Quere, What are the medical properties and adaptations of this?

Seventeenth Meeting.

Prepare a dozen pills as follows :

A. Pilulæ Opii, (U. S. P.)
or Pilulæ Rhei, "
or Pilulæ Aloes, "

nent, portable, less offensive than most forms. Art of administering them.

The excipient very important. How far may the pharmaceutist select this excipient?

Remarks on the officinal *masses*, and their use as excipients.

The eligibility of extracts in combination with unadhesive materials, to make pill masses.—The limit to the size of pills.—Syllabus of substances suited and unsuited to this form.—See Parrish's Pharmacy, 3d ed., p. 699.

Remarks on the officinal Pilulæ.—Best processes for Quinine Pills, Rhubarb pills, Copaiva pills, Alterative pills of iodide of iron, &c.

Remarks on the dispensing of pills.—Pill boxes, labelling, &c.

XXI. *Mixtures.*

Strictly, preparations in which insoluble substances are suspended in liquids. In a more general sense, the term is used to designate liquid preparations containing several ingredients.

Distinction between solutions, mucilages and emulsions.

Emulsions, natural and artificial.

Mixtures of oil of turpentine, cannabis indica, and spermaceti, made by the use of a fixed oil and emulsion. Copaiva mixtures, with and without an alkaline ingredient.

Castor oil, almond oil, and cod liver oil mixtures.

Elegant *versus* unsightly and disagreeable mixtures.

The art of flavoring, of coloring, of dispensing, of administering.

Mucilagines, U. S. P. Mucilago Acaciæ the only one much in use in preparing mixtures.

Syrupi, U. S. P. Group 1, p. 238, Parrish's Pharmacy, used as adjuvants in making mixtures. Syrupus Amygdalæ also adapted to irritable conditions of the mucous surfaces.—Syrupus Aurantii florum, a fine sedative.

Chemical and pharmaceutical incompatibles.—See Parrish's Pharmacy, 3d ed., p. 725.

B. Pilulæ Rhei Compositæ, U. S. P.
or Pilulæ Aloes et Myrrhæ, "
or Pilulæ Aloes et Mastiches, "
or Dr. Chapman's Dinner Pills, "

C. Pilulæ Catharticæ Compositæ, U. S. P.

D. Pilulæ Antimonii Compositæ, U. S. P.
Or "Dr. Vance's Rheumatism and Gout Pills."
Or "Lartique's Gout Pills."

Let one or more of the class prepare the Pilulæ Quiniæ Sulphatis, U. S. P., and another, pills of Soluble Sulphate of Quinia, Parrish's Pharmacy, 3d ed., p. 705.

The Queries may have relation to the medical properties, doses and adaptations of each.

Eighteenth Meeting.

Students wholly unaccustomed to manipulation will require further practice in pill making. Let such make—

Pilulæ Ferri Compositæ, U. S. P.
Pilulæ Ferri Iodidi, "
Pills of Ext. of Hemp, Par. Ph. No. 37.
Compound Copaiva Pills, " No. 69.
Dr. Otto's Emmenagogue Pills, Par. Ph. No. 75.

A. Prepare—
Mucilago Acaciæ, U. S. P.

B. Prepare—
Mistura Assafœtidæ, U. S. P.
or Mistura Amygdalæ, "
or Mistura Ammoniaci, "

C. Prepare—
Mistura Cretæ, U. S. P., or
Mistura Glycyrrhizæ Composita, U. S. P.

D. Prepare—
(basis) ℞. Copaibæ, ℥i.
(adjuvant) Olei Cubebæ, ♏ xxx.
(corrective) { Tinct. Opii., fʒj.
Olei Cinnam. gtt. iv.
(excipient) { Pulv. Acaciæ,
Sacchari, aa. ʒiij.
(diluent) Aquæ, f℥viss.
Fiat mistura.

Dose, a table-spoonful three times daily.

XXII. *Mixtures, Lotions, Collyria, &c.*

Mode of suspending Quinine in Mixture—Solutions of Sulphate of Quinia and other Cinchona Alkaloids—Chloroform mixtures with and without Camphor—Mode of administering Camphor in Mixtures—Tolu Expectorant Mixtures, as described and illustrated in the text book.

Carbonate of Ammonia requires viscid correctives.

Preparations of Iron generally to be avoided in solution with vegetable astringents—Mistura Ferri Composita, U. S. P.

Lotions.—Solutions chiefly of freely soluble salts, designed for external use—Black wash and Yellow wash.

Collyria.—Various astringent salts used—Thomas' Eye Water, Par. Ph. p. 748,—Chloride of zinc formed in solution.

XXIII. *Cerates and Ointments.*

Difference between a Cerate and an Ointment.

The unctuous ingredients studied—See Parrish's Pharmacy, 3d Edition, p. 552 and p. 753.

First and Third Groups of Cerates and Ointments—Comments on their properties, modes of preparation and uses.

Remarks on rancidity—how prevented.

Lard (or Benzoinated Lard) used in winter—Simple Ointment in summer—Cold cream (Ung. Aquæ Rosæ)—Its preparation and uses.

Ceratum Resinæ, an appropriate vehicle for stimulating applications, as in Ceratum Sabinæ.

Use of separate slab and spatulas for unctuous preparations—How cleaned.

XXIV. *Cerates, Ointments, Blisters.*

Remarks on Mercurial and Iodine Ointments and on Ointments of Carbonate of Lead and Oxide of zinc.

Incorporation of Extracts in Ointments as in Ung. Belladonnæ and Ung. Stramonii; the Alkaloids may substitute these—Ung. Veratriæ, Aconitia Ointment, &c.

Nineteenth Meeting.

A. Prepare—
Mistura Ferri Composita, U.S.P., or
Mistura Chloroformi, U.S.P., or Chloroform mixture, without Camphor. Par. Pharm. p. 732.

B. Prepare—
Castor Oil Mixture, Par. Pharm. p. 734—other Emulsions may be substituted.

C. Prepare—
Tolu Cough Mixture. Par. Pharm. p. 742, or Carbonate of Ammonia Mixture. Par. Pharm. p. 731.

D. Prepare—
Emulsion of Pumpkin Seeds. Par. Pharm. p. 744. Used as a Tænicide, a pint in a day.

The class may select from the Lotions, Collyria, Gargles, &c., instances for preparation.

Twentieth Meeting.

A. Prepare—
Ceratum Adipis, U.S.P., or
Ceratum Cetacei, U.S.P., or
Ceratum Saponis, U.S.P.

B. Prepare—
Unguentum Benzoini, U.S.P., or
Unguentum Adipis, U.S.P., or
Unguentum Aquæ Rosæ, U.S.P.

C. Prepare—
Unguentum Gallæ, U.S.P., or
Unguentum Acidi Tannici, U.S.P.

D. Prepare—
Ung. Hydrarg. Oxidi Rub., U.S.P., or
Unguentum Zinci Oxidi, U.S.P., or
Ceratum Zinci Carbonatis, U.S.P.

Queries as to the uses and adaptations of each.

Twenty-first Meeting.

A. Prepare—
Ceratum Resinæ, U.S.P., or
Ceratum Resinæ Comp., U.S.P.

B. Prepare—
Unguentum Iodinii, U.S.P., or
Unguentum Iodinii Comp., U.S.P., or
Unguentum Potassii Iodidi, U. S. P.

Second Group.—Deshler's Salve firmer than Cerat. Resinæ—Tar Ointment *versus* Creasote Ointment—Blisters and Blistering Cerate. Par. Pharm. p. 757. Spreading of Blisters.

Ceratum Extracti Cantharidis, properly diluted, forms a good stimulating dressing.

Fourth Group.—Citrine Ointment—Preparation, *rationalé*, changes, &c. Extemporaneous substitute for Goulard's Cerate. Par. Pharm. p. 766.

XXV. *Liniments and Plasters.*

Resemblances and differences between Liniments and Ointments—Two Groups of Liniments. See Syllabi and Remarks.

Ingredients entering into Plasters—Lead plaster, Parrish's Pharmacy, p. 549, and Resins, p. 581, studied as the chief ingredients of plasters. See Syllabus and Remarks, p. 774.

Soap plaster in the treatment of bed sores—Mechanical and Stimulating effect of Resinous plasters—Rubefacient, or Strengthening plasters.

XXVI. *Spreading of Plasters — Cataplasms, &c.*

Adhesive plaster cloth—Its uses—How preserved and restored when brittle.

Sheep Skin, Shamois and other materials on which plasters are spread—Their respective uses and adaptations.

The art of melting and properly spreading the several kinds of plasters.

Breast Plasters—

Cerates used as plasters—Cerat. Resinæ Comp. used to check mammary abscess.

Plasmata—Glycamyl Sinapis, &c.

Cataplasms or poultices.

Concluding remarks and recapitulation of the topics discussed and the knowledge imparted.

C. Prepare—
Ceratum Cantharidis, U. S. P.

D. Spread blisters to be applied behind the Ear, &c.

This manipulation should be practiced by all the class.

As opportunity offers, the following should be prepared by members of the class:

Unguentum Belladonnæ, U.S.P., or
Unguentum Stramonii, U.S.P., and
Unguentum Creasoti, U.S.P.

Twenty-second Meeting.

Recur to minutes of Eighth Meeting.

A. Prepare—
Linimentum Ammoniæ, U.S.P., or
Linimentum Calcis, U.S.P.

B. Prepare—
Linimentum Camphoræ, U.S.P., or
Linimentum Chloroformi, U.S.P.

C. Prepare—
Emplastrum Belladonnæ, U.S.P., or
Emplastrum Picis cum Catharide, U. S. P.

D. Spread a Burgundy pitch or Hemlock plaster 4×6, or a soap plaster.

Twenty-third Meeting.

A. Take of Belladonna Plaster 1 part,
Logan's Plaster 2 parts.

Melt them together and spread upon Shamois leather by pattern. Fig. 210, Parrish's Pharmacy.

B. Spread Warming plaster for the chest.

C. Make—
Plasma Belladonnæ
With Extract of Belladonna, 30 grs.
Glycerin, 1 oz.
Starch, 1 dr.

D. Make—
Cataplasma Sinapis.
Par. Pharm. p. 785.

Queries.—On the whole subject of Topical Applications.

Review of minutes. Adjourn *sine die.*

ON THE ASSAY OF FRENCH BRANDY AND WHISKY.

BY JOHN M. MAISCH.

At the U. S. Army Laboratory at Philadelphia, I have had occasion to examine during the last year, a number of samples of French brandy. I had laid out for my use a course of analysis, and when I proceeded to write out the results for the information of the American Pharmaceutical Association, I observed the paper of Dr. Samuel P. Duffield, of Detroit, Michigan, published in the American Journal of Pharmacy, March, 1862, p. 118. The system which Dr. Duffield has adopted agrees in all its features so closely with mine, that I may refer to the Journal just named for further information.

For practical purposes, I deem the distillation of brandy useless; the quantity of extractive matter derived from burned sugar and a trace of tannin is so small as not to interfere with the determination of the percentage of alcohol, which is best ascertained directly by an alcoholometer with a scale of correction for the differences in temperature.

For detecting the origin of the liquor, I follow Molnar's test, by evaporating the brandy with caustic potassa and supersaturating with sulphuric acid. The odor which is developed indicates the kind of spirit employed. This mode of ascertaining the origin of brandy depends upon the individuality of the examiner, and his familiarity with the odors produced by the different fusel oils under the circumstances mentioned, and is rendered more difficult by the fact that grapes grown in different localities generate on fermentation, fusel oils differing from each other to a certain extent, as becomes evident from the different flavor of their distillates. The artificial so-called œnanthic ether may be detected by this process without much trouble, as also grain spirit, if any should have been added, without completely removing the fusel oil.

The testing of the distillate, by treating it with sulphuric acid, has been tried by me but a few times, when I obtained a slight coloration. I am not quite sure whether brandies ought to be rejected on that account, unless the color produced is deep, and the distillate gives evidence of the presence of grain fusel oil.

I have searched several times for hydrocyanic acid (*i. e.*, oil of bitter almonds, &c.,) but did not detect any; its presence occurs probably very rarely. If the alcohol is carefully evaporated at a low heat, the residue would most likely have, to a certain extent, the odor of oil of bitter almonds. This residue, left after the evaporation of the alcohol, is very useful for ascertaining the fraudulent additions of aromatics and certain fruits to impart flavor. The former may be recognized by their odor and taste; the latter from their acid, which is either tartaric, citric or malic, or several of them. Of good brandy, the residue left has a peculiar aromatic brandy odor, and a sweetish insipid taste. Metals, like copper, &c., may be likewise found in this residue, if present. I have never observed any.

Brandy contains a minute quantity of tannin, producing a blackish green, rarely a bluish black color with iron; the supposition is, that it is derived from the casks in which it is imported, in which case it should impart a blue color to persalts of iron, which appears green from the yellow color of the brandy imparted to it by burnt sugar. I am in habit of using for this test Monsel's solution, the officinal Liquor Ferri Subsulphatis, diluted with about eight times its bulk of distilled water. For two fluidrachms of the brandy, two or three drops of the iron solution are sufficient. An excess should be avoided, in order not to interfere with the color produced, which should be merely a dark tint. If no coloration is produced, or a very deep one, or a precipitate, we may at once infer that the brandy is an artificial one, or, at least, not produced in France.

I have lately commenced to ascertain the quantity of free acetic acid contained in brandy, and believe it to be a good means for ascertaining approximately the age of it. Of brandies obtained from the most reliable sources, it was ascertained that the quantity of acetic acid increases by age. Unfortunately, the results have been lost, except a few.

Of twenty-seven samples of brandy submitted for examination, one proved to be entirely fictitious, made of ordinary druggists' alcohol diluted with water, so as to contain 54 per cent. by volume of alcohol, flavored with some artificial ether, considerably colored by burnt sugar, and without a trace of tannin or free volatile acid; another had been sweetened and flavored with some fruit, most probably prunes or plums. A third sample was of excellent quality, but had to be rejected as too weak, it being two degrees below proof. I was subsequently informed, that it had been shipped from France in the early part of 1861 for the Charleston, S. C., market, but arrived after the Southern ports had been blockaded. Three other samples appeared to be at least partly made up with some artificial flavoring material. Of the other twenty-one, two contained 54, one 56·5, one 57, one 58, three 59, four 61, one 61½, two 62, one 62·5, five 63, and one 63·5 volumetric per cent. of alcohol. Fourteen imparted to iron salts a blackish green, the others a greenish blue color.

In ascertaining the quantity of acetic acid in brandy, it was always first proved to be free from non-volatile acids; then 20 CC.M of the brandy were measured with $\frac{1}{10}$ nNH_3, and from this result the amount of acetic acid contained in one pint was calculated. The following table exhibits these results:

CCM 1-10 nNH_3. for 20 CCM brandy.	Grm. $C_4 H_4 O_4$. in one pint.	CCM 1-10 nNH_3. for 20 CCM brandy.	Grm. $C_4 H_4 O_4$. in one pint.
1·7	·241	1·4	·199
1·3	·185	1·1	·156
·7	·099	1·7*	·241
1·0	·142	1·3	·185
1·5*	·213	1·3	·185
1·3	·185		

The two samples marked * were dark brandies; that is, they were considerably colored by caramel, on account of which the calculated amount of acetic acid is too high. While the little caramel in pale brandies scarcely interferes with the result in this experiment, dark brandies require to be distilled. With the exception of the first one, I believe that none of the above brandies were over two years old.

For assaying whiskies, I proceed in nearly the same way. With some experience, it is very easy to tell by the potassa test the difference between rye and corn whisky, or even a small proportion of the latter mixed with the former, the difference in odor being very marked.

All commercial whiskies which I have examined contain, besides alcohol, water and fusel oil, also a minute quantity of acetic acid generated by the oxidation of the alcohol under the influence of the atmosphere, a trace of tannin, which has been probably obtained from the barrels in which the whisky was kept, and a trace of sugar, perhaps, from the addition of a minute quantity of burned sugar, to impart to it a light yellowish brown tinge. After evaporating a portion of whisky to about one-eighth its bulk, the residuary liquid must be free from acid reaction, and have but a very slight odor and an insipid taste.

At the U. S. Army Laboratory at Philadelphia, all whiskies obtained from corn are rejected, and rye whiskies only put up, for the use of the sick and wounded soldiers. The writer's taste is not sufficiently cultivated to detect wheat in rye whisky; the fusel oil of both these grains appears to be very nearly identical, for several samples submitted, which were represented to have been made from rye and wheat together, generated, by Molnar's test, an odor scarcely differing, in my opinion, from that obtained under the same circumstances by pure rye whisky.

Of the thirty-six samples submitted in August and September, 1863, twenty-one were below proof; that is, they contained less than 50 volumetric per cent. of alcohol; two of these were merely diluted alcohol colored by considerable burnt sugar, and without a trace of tannin or acetic acid; two were corn whiskies; one made of rye and corn; two pure rye whiskies; the others were not further examined. Of the fifteen which were above proof, one had been distilled with a small quantity of juniper berries; two yielded, by Molnar's test, a peculiar odor reminding of some fruit, but was free from fruit acids; one gave the peculiar odor of apple whisky, together with the pure rye, acquired, as was afterwards ascertained, by having been kept in cider barrels; and one proved to be made of corn and rye.

All the others were pure rye whiskies, and varied in alcoholic strength between 50 and 55 per cent. Twenty CCM, of eight samples, required of $\frac{1}{10}$ nNH$_3$ ·8, 1·2, 1·8, 1·5, 2·0, 1·7, ·9 and 1·2 CCM, which correspond in a pint with the following amounts of acetic acid: ·114, ·170, ·257, ·213, ·284, ·241, ·128 and ·170 grammes.

Subsequently, fifty-seven samples were examined, seven of which were below proof, four were made wholly or in part of corn, one appeared to be malt whisky, two were probably, at least in part, made of wheat, one had, besides the fusel oil, another undetermined odorous principle, and one yielded a bitter-sweet extract, and was rejected on that account. The others were rye whiskies, ranging in alcoholic strength between 50 and 57 per cent., and required for neutralizing the acetic acid of 20 CCM, the subjoined amounts of $\frac{1}{10}$ nNH$_3$, which corresponds with the following weight of $C_4 H_4 O_4$ contained in one pint..

CCM of 1-10 nNH$_3$. for 20 CCM.	Grm. $C_4 H_4 O_4$. in one pint.	CCM of 1-10 nNH$_3$. for 20 CCM.	Gram. $C_4 H_4 O_4$. in one pint.
·5	·071	·47	·067
·2	·028	1·15	·163
1·4	·199	·6	·085
1·45	·206	1·24	·176
·25	·035	·8	·114
1·0	·142	·75	·107
1·15	·163	·85	·121
·5	·071	·85	·121
·53	·075	·7	·099
1·35	·192	·45	·064
·32	·045	·85	·121
·35	·049	·92	·131
1·05	·149	·75	·107
1·35	·192	·5	·071
1·4	·199	·15	·021
1·2	·170	·88	·125
2·05	·291	1·35	·192
2·25	·319	1·40	·198
1·5	·213	·9	·127
1·2	·170	·6	·085
1·6	·227	·9	·127
1·6	·227	·5	·071
1·7	·241	·5	·071

The smallest amount of acetic acid found in one pint was twenty-one, the largest 319 milligrammes, or fifteen times as much as the former, a difference which is so considerable as to invite the attention of those who are enabled to investigate whisky from the time it leaves the still until after it has been kept for several years.

ON THE QUALITY OF SHERRY WINE OF OUR COMMERCE AND ITS ASSAY.

BY JOHN M. MAISCH.

Vinum Xericum of our present, the Vinum album of our former Pharmacopœias, is, perhaps, more used for medicinal purposes in the United States than any other wine. It is, therefore, of considerable importance to the pharmaceutist to have a ready mode, easy of execution, for testing its quality and purity. Since my connection with the U. S. Army Laboratory at Philadelphia, I have had occasion to examine many samples of Sherry wine, large quantities of which are used in the army hospitals. All the purchases of wine and other liquors, made by the U. S. Army Medical Purveyor at Philadelphia, are made by sample, and the liquor when received—one or two barrels picked out of the whole lot at random—is again assayed to ascertain its identity with the sample.

The assay, to be of practical utility, need not consider all the numerous constituents of the fermented juice of the grape; all that is requisite, is to establish that the wine examined originated from the grape juice, that it is unadulterated with wine from other fruits, or with spirit from other sources than the grape, and that its stimulating, refrigerating and nourishing properties are developed in the highest degree.

White wines, to which class sherry belongs, contain but little coloring matter, and usually but a trace of tannic acid; all the other constituents they have in common with the red wines. These are alcohol, water, sugar, gummy extractive and albuminous bodies, free acids, like tartaric, racemic, malic and acetic acid, the tartrates of potassa, lime and magnesia, sulphate of potassa, chloride of sodium, traces of phosphate of lime and the flavoring ingredients œnanthic, acetic and other ethers.

The most important of these constituents are alcohol, sugar and extractive and the vegetable acids. To gain an idea of the medicinal value of a wine, the above bodies must be determined quantitatively, and I will give here the method which I follow, and which I consider sufficient for all our purposes.

The determination of the quantity of alcohol is connected with no difficulty. Eight fluidounces of the wine are distilled from a pint glass retort over a gas burner, the flame of which is covered with a wire gauze; the distillation is continued until four fluidounces have passed over, and, if the heat has been regulated so as to keep the contents just at the boiling-point, the distillate will contain all the alcohol and nearly all the acetic acid contained in the wine. The residue in the retort is used for the determination of all the non-volatile constituents.

The distillate is diluted with distilled water to eight fluidounces, and the alcohol is estimated directly by an alcoholometer with a scale of correction for the difference in temperature. The acetic acid is estimated by volumetric analysis in the usual manner. The free acids contained in the residue are determined in the same way, and the whole calculated as tartaric acid; for, if racemic acid should be present, its quantity would correspond with tartaric acid precisely, the equivalent weights of both being alike. Malic acid, which I have found in nearly all the samples in minute quantities, makes no perceptible difference in the result. Citric acid has, as far as I know, never been found in any wine known to have been made from the grape, and I have, for that reason, been in the habit of rejecting all sherries containing this acid. The only inaccuracy, therefore, in assaying the free non-volatile acids in the residue, can occur through the decomposition of some sugar or other constituent during the evaporation, and the probable formation of some glucic or apoglucic acid, which, however, have never been found in more than very minute proportion.

For making the acidometric assays, I am in the habit of using ammonia of 1-10th normal strength, which I find keeps very well in accurately ground glass-stoppered bottles. I never make over four or six fluidounces at a time, and have found no perceptible difference in its saturating capacity after keeping it for about two months, the bottle being occasionally opened as required. But, notwithstanding this experience, I invariably make a titration with oxalic acid before using it for the wine, to satisfy myself about its correctness. Ammonia of normal strength, however, does not keep so well, but becomes weaker if kept for any length of time in bottles, but partly filled and occasionally opened.

The tenth normal solution of ammonia has other advantages over a soda or potassa solution, which are of considerable importance for technical purposes. Ammonia is easily obtained and kept free from carbonic acid, so that, on neutralization, no evolved carbonic acid renders the result inaccurate or uncertain, as may be the case with the fixed alkalies unless protected by various precautionary measures. The ordinary aqua ammoniæ (made, of course, for analytical purposes with distilled water) is so easily diluted to the proper strength, that not more than two, or to the utmost three, titrations are requisite. The whole process of dilution occupies but a few minutes.

Of the distillate, I use 20 cubic centimetres for titration with this ammonia, and calculate the whole as acetic acid, reducing it to the quantity contained in one pint. The equivalent weight of $C_4H_4O_4 = 60$, one pint = 473·15 cubic centimetres; these two figures multiplied with each other, furnish 28389, which result is to be multiplied by the number of cubic centimetres of 1-10th nNH_3 and then divided by 200,000, that is, by twenty times the number of cubic centimetres contained in ten litres, which contain seventeen grammes (one equivalent) of NH_3. For all practical purposes the result will be sufficiently accurate if $\frac{284}{2} = 142$ is multiplied by 1-10th nNH_3 in cubic centimetres, and the result divided by 1000, taking, of course, into account the decimals in the measure of the ammonia; the result gives the actual weight in grammes of dry acetic acid contained in one pint of the wine.

The amount of free tartaric acid in the residue is found in a similar way. For measuring it, I employ only 10 cubic centimetres of the residue left in the retort after bringing it up by distilled water to the original measure of the wine. Tartaric acid $C_8H_6O_{12}$, equivalent weight 150, is bibasic; one-half of its equivalent = 75 saturates one equivalent of ammonia. In carrying out the calculation for one pint, we have therefore 473·15 ×75 = 35486·25, which figure is to be multiplied by the cubic centimetres of 1-10th nNH_3 used for neutralization, and divided by 100,000, that is by ten times ten litres in cubic centimetres. For practical purposes, 355 may be multiplied by 1-10th nHN_3 in cubic centimetres and divided by 1000.

In making these acidometric assays, no difficulty is experienced with the distillate, which is perfectly colorless, and shows the change in the color of litmus distinctly. It is otherwise with the residue in the still,—the color of which darkens materially during the concentration, so that, after it is brought to its original measure by water, it is invariably of a darker color than the wine. On the addition of litmus this color changes to brown-yellow, and, when nearly saturated by ammonia, every drop of this test produces a greenish color, which is distinctly visible in a flat evaporating dish; as soon as this color ceases to be produced, the saturation is complete. To avoid errors, I invariably make two assays.

The amount of sugar and extractive matter is estimated from the specific gravity of the residuary solution diluted to the original measure by distilled water, in accordance with Balling's table given in his *Gährungschemie.* The specific gravity taken at 17·5° C., indicates for each ·004 above 1·000 one per cent. sugar and extractive up to 1·040, which shows 10 per cent. According to Mulder, the figures thus obtained are not absolutely accurate, but are, for large quantities of extractive, a little too low, and for small quantities, somewhat too high. But they answer all practical purposes.

The following table gives the results of the analysis, made in the manner indicated, of all the samples of Sherry wine that were presented at the U. S. Army Laboratory between Sept. 22d, 1863 and August 10th, 1864.

		DISTILLATE.			RESIDUE.				
Number.	Specific gravity.	Percentage of alcohol.	c. c. m. 1-10th nNH_3 for 20 c. c. m.	$C_4 H_4 O_4$ in one pint.	c. c. m. 1-10th nNH_3 for 10 c. c. m.	$C_8 H_6 O_{12}$ free in 1 pint.	Specific gravity.	Percentage of extract.	Contained citric acid.
1.—	·990	20·5	1·10	·156grm.	6·5	2·31grm.	1·012	3·0	Much.
2.—	·980	21	·8	·114	6·0	2·13	1·008	2·0	Less.
3.—	·987	21	·6	·085	8·0	2·84	1·015	3·75	Little.
4.—	·990	23	1·8	·255	7·5	2·66	1·020	5·00	None.
5.—	·987	16·5	1·1	·156	5·5	1·95	1·012	3·00	None.
6.—	·985	23	1·2	·170	5·2	1·85	1·014	3·50	None.
7.—	·990	22·5	1·0	·142	4·5	1·60	1·016	4.0	Little.
8.—	·995	22	1·3	·184	6·2	2·20	1·021	5·25	Little.
9.—	...	19	·59	·084	4·6	1·633	1·008	2.	None.
10.—	...	21	·88	·125	6·3	2·236	1·012	3.	"
11.—	...	21·5	1·63	·231	5·8	2·059	1·015	3·75	Trace.
12.—	...	22	·85	·120	5·6	1·988	1·015	3·75	None.
13.—	·992	23	2·30	·326	5·2	1·846	1·018	4·5	"
14.—	·987	22·5	·88	·125	5·2	1·846	1·014	3·5	"
15.—	·987	24	1·18	·167	5·4	1·917	1·018	4·5	Trace.
16.—	·987	25	1·13	·160	4·3	1·526	1·018	4·5	None.
17·—	·991	21	1·16	·165	7·3	2·591	1·018	4·5	"
18.—	·987	20	·93	·132	5·5	1·952	1·012	3·0	"
19.—	·995	19·5	·45	·064	4·0	1·420	1·021	5·25	"
20.—	·987	17·5	1·08	·153	5·2	1·846	1·012	3·0	"
21.—	·992	21	1·58	·224	5·2	1·846	1·021	5·25	"
22.—	·994	19·5	·35	·050	5·9	2·094	1·012	3·0	Slight trace.
23.—	·995	18	·83	·118	6·7	2·378	1·010	2·5	"
24.—	·992	20·5	1·02	·145	5·8	2·059	1·012	3·0	None.
25.--	·992	22	·81	·115	4·5	1·597	1·007	1·75	Very slight tr.
26.—	·980	19	·10	·014	1·0	·355	1·010	2·5	Consider'bl.
27.—	·985	22	1·15	·163	6·5	2·307	1·012	3·0	None.
28.—	·982	22	·28	·040	6·4	2·272	1·011	2·75	"
29.—	·980	19	·06	·0085	3·4	1·207	1·006	1·50	"
30.—	·990	20	3·00	·426	6·9	2·449	1·015	3·75	"
31.—	·980	25	1·20	·170	5·3	1·881	1·014	3·5	"
32.—	·990	19	·71	·101	7·0	2·485	1·015	3·75	"

No. 30 was Lisbon wine, all others were sherry of various brands.

The specific gravities of the wines examined vary between ·980 and ·995; they were taken with a hydrometer, and have, therefore, no claim to *absolute* correctness. I have not been able to find any statement of the specific gravity of this wine; but Mulder's *Chemie des Weines* contains nearly all the results of the analyses of wines up to the year 1856, and I observed there of Madeira, a wine nearly allied to Sherry, the following statement by Beek: three samples ·9866, one (Sercial) ·9861; and by Vlaanderen, who ascertained the specific gravity at the low temperature of 9 to 10° C. for twelve samples of Madeira, the lowest ·9930 and the highest ·9974; and for twelve samples of Teneriffa, ·9908 to ·9985.

Brande puts the lowest percentage of alcohol for Sherry at 17·00, and the highest at 18·37; and Christison between 17 and 20. Among the 32 samples examined by me, there are but nine below 20 per cent., two being as high as 25, one 24, three 23, two 22·5, five 22, one 21·5, five 21, two 20·5 and two 20 per cent. by volume. It appears from this, that Sherry wine exported to this country is richer in alcohol than the same wine as met with in Europe. It is not impossible that this is in great part due to the addition of alcohol previous to exportation. The distillate, when mixed with concentrated sulphuric acid, acquires, on standing, a very faint brownish tinge; but I am not prepared to assert that this coloration is due to some fusel oil other than that obtained from the grape.

The quantity of acetic acid ($C_4H_4O_4$) in one pint of wine I have found to vary between ·0085 grm. (No. 29) and ·014 (No. 26), both poor wines, (considering all the results), up to ·326 (No. 13) and ·426 grm. (No. 30). Mulder states that acetic acid is tenaciously retained by the residue in the retort, but that the distillation must not be carried too far, so as not to decompose some extractive and form acetic acid. If the distillation is carried on carefully, as described by me, the last portions of the distillate will have scarcely any effect on litmus, so that by far the greatest quantity must have distilled over. The highest quantity found by my assays gives 9-10ths per mille. Mulder found in Teneriffa 11-10ths, and in Madeira 17-10ths per mille anhydrous acetic acid $C_4H_3O_3$.

If we leave No. 26 out of view, which contained free non-volatile acid corresponding to only ·355 grm. tartaric acid, the smallest quantity found in one pint was 1·207 grm. (No. 29) and the largest 2·84 grm. (No. 3); or, if we reject this because it contained some citric acid, we have 2·66 grms. (No. 4) per pint as the largest quantity. Taking the actual weight of one pint of wine at 7200 grains, which is correct for the specific gravity ·990, we have for the lowest quantity 18·63 grains or 2·6 per mille, and for the highest quantity 41·05 grains or 5·8 per mille. Mulder, in his *Chemie des Weines*, gives Güning's results for Madeira at 3·1, and for Teneriffa at 3·5, for Tavella as high as 7 parts free tartaric acid in 1000 parts.

By actual experiment, Mulder obtained from Madeira between 3·64 and 4·54, and from Teneriffa 2·84 to 3·73 per cent. dry extract. The lowest of our wines gave, by Balling's approximate method, 1·50 (No. 29) as the lowest and 5·25 (Nos. 8, 19 and 21) as the highest percentage of extractive matter. The 32 samples give an average of 3·46 per cent.

With the constituents of Sherry wine varying so considerably in their relative proportion amongst themselves, the question naturally presents itself, which ought to be considered most suitable for medicinal purposes? This question is difficult to answer from a chemical point of view; but, on reflection, we come to the following conclusions:

1. Citric acid having never been obtained from wines known to have been made from the grape, all wines containing it are to be considered entirely fictitious or mixed with wines of some other fruit.

2. What we call free acid in wines, is for the greatest part the unsaturated half-equivalent of the acid cream of tartar; consequently, those wines containing the greatest proportion of free tartaric acid will, as a general rule, likewise contain the relatively largest quantity of cream of tartar.

3. The stimulating qualities of wine being due chiefly to alcohol, those wines richest in it are to be considered superior, provided the absence of grain spirit be established.

4. Diluted alcohols, on exposure to air, gradually form a small quantity of acetic acid, which increases by age; therefore, wines containing the largest percentage, may be considered the oldest. The fraudulent addition of acetic acid to wine can for a long time

be recognized by the stinging odor and sharp taste, before it becomes blended with the odor and taste of the other ingredients.

5. Sugar and extractive, the other important constituents, cover the taste of the free acid; they must be present in a certain quantity to have that effect. Their alimentary and demulcent properties have undoubtedly some effect where wine is used as a medicine.

6. Sherry wine, as it appears in our commerce, being one of the strongest wines, appears to me most valuable for medicinal purposes if its principal constituents are present in the largest proportions, and their importance seems to rank in the following order: alcohol, sugar and extractive, acids, always taking the age of the wine into account, which, aside from the taste, can be best judged of from the percentage of the volatile (acetic) acid.

ON SOME MEDICINAL SPIRITS.

BY JOHN M. MAISCH.

The medicinal spirits which do not contain ether as their principal remedial agent, are solutions of volatile oils in alcohol. Starting from this fact, the last edition of our national Pharmacopœia *appears* to have taken a step in the right direction, and simplified the preparation of this class of preparations by directing to dissolve the oil in a given portion of alcohol.

But let us ask the questions: What are volatile oils? And are these the only volatile principles contained in plants?

In answer to the first question, we are told that volatile oils are compounds, which are obtained from plants by expression or by distillation with water, possess the peculiar odor of the plants, or their parts from which obtained, produce a greasy stain upon paper disappearing on the application of heat, are sparingly soluble in water, freely soluble in ether and absolute alcohol. In regard to their chemical constitution, they are usually mixtures of two or more substances, one of which, being more volatile, more limpid and less soluble in alcohol and water, is called elæopten, and usually consists of C and H; while the other portion, which is called stearopten, is generally volatilized at a higher temperature, has a higher specific gravity, is more soluble in alcohol and water, and usually consists of the three elements, C, H and O.

It cannot be denied, that some of the volatile oils are most likely closely allied with each other by reason of their ultimate constitution; I need but refer to the various oils of binary composition with the formula $C_5 H_4$, or some multiple of the same. But, speaking from a chemical point of view, what relation does exist, for example, between oil of turpentine, cinnamon, bitter almonds, winter green and others?

There are several so-called oils, or the principal portions of the same, which are, in chemical constitution, aldehydes, as, for instance, oil of rue $C_{20}H_{20}O_2$ the aldehyde of caprinic acid $C_{20}H_{20}O_4$; oil of Roman chamomile (Anthemis nobilis) $C_{10}H_8 O_2$ the aldehyde of angelicic acid $C_{10} H_8 O_4$; oil of bitter almonds $C_{14} H_6 O_2$ the aldehyde of benzoic acid $C_{14} H_6 O_4$; oil of Spiræa ulmaria $C_{14} H_6 O_4$ the aldehyde of salicylic acid $C_{14} H_6 O_6$; oil of cinnamon $C_{18}H_8 O_2$ the aldehyde of cinnamic acid $C_{18}H_8 O_4$; oil of cumin seed $C_{20} H_{12} O_2$ the aldehyde of cuminic acid $C_{20}H_{12} O_4$, and perhaps others. Oil of anise $C_{20} H_{12} O_2$ yields, by oxidation with dilute nitric acid, the aldehyde of anisic (or dragonic) acid $O_{16} H_8 O_6$, and oil of Gaultheria procumbens is an acid ether, viz., methyl-salicylic acid $C_2 H_3 O, HO, C_{14} H_4 O_4 = C_{16} H_8 O_6$.

These few examples prove that there is a wide difference in the actual constitution of the essential oils; for even the above aldehydes belong nearly all to different groups, and scarcely two of them can be considered homologous. The chemical nature of almost all the members of this class of bodies has not been cleared up yet; possibly there may be others bearing a similar relation to acids and other compounds like the above; but enough is known already to show that what we are wont to call volatile oils are as diversified in their true nature as organic compounds can well be, and no such intimate relation exists between them as between the numerous fixed oils.

The name of essential or volatile oils, therefore, must necessarily sooner or later be discontinued, though I grant that it will retain its importance in Pharmacy as a collective name, which cannot, perhaps, be substituted by a better or more expressive one.

Let us now proceed to the second question: Are essential oils the only volatile principles of plants?

This must be answered emphatically in the negative. The distillates, from which the volatile oils have been separated, have in all cases a flavor and taste so essentially differing from the solutions of these identical volatile oils in distilled water, that the latter can in no case be mistaken for the former. The volatile principles, which remain dissolved in the water, are undoubtedly present in minute quantity only, but sufficient to render these distillates much more palatable. Cinnamon, as an instance, yields a distilled water, mild and decidedly sweet to the taste, while the aqua cinnamomi of our Pharmacopœia possesses only the hot aromatic taste of the volatile oil.

Although we know nothing of the nature of these principles, it appears not more than proper, that we ought to take advantage of their presence in the distillate, for all preparations where distillation can be resorted to. We would be compensated by a preparation much more acceptable than those made by simple solution.

Our present Pharmacopœia contains for nearly all the medicated waters, besides the solution of the oils in water, through the aid of carbonate of magnesia, also directions for obtaining them by distillation from the respective drugs. The conscientious pharmaceutist, who has tried this alternative process, cannot fail to perceive the superiority of these waters over those made by the old-fashioned way; and will join in the expression of the hope, that at the next revision the Pharmacopœia will direct them to be made by distillation only.

The Pharmacopœia recognises ten spirits containing volatile oils, two only being made by distillation, and, strange to say, both used less, perhaps, than any of the others. These two are Spiritus Myristicæ and Lavandulæ. The reasons which guided the Revisional Committee, in selecting nutmegs and lavender flowers for their simple distilled spirits, are unknown to me. According to my experience, it is easier to find in our drug market a pure oil of nutmegs, than the true and unadulterated oils entering into the composition of Spiritus Juniperi compositus and Lavandulæ compositus; moreover, oil of nutmegs and oil of lavender are used in preparing the officinal Spiritus ammoniæ aromaticus.

Spiritus Lavandulæ, I believe, is but very rarely prescribed, and if prescribed, still less rarely furnished; it is used almost exclusively in the preparation of Mistura Ferri composita; for it, it appears, the commercial oil of lavender is not good enough. But the same oil which, as my friend, Thomas S. Wiegand, pointed out to the Association in 1862, may be understood oil worth from five cents to $2 per ounce, as the judgment or cupidity of the maker may direct, is deemed to furnish a suitable Spiritus Lavandulæ compositus, the spirit used more extensively in medicine than all the others combined. These facts appear to me to be clearly inconsistent with the otherwise progressive spirit of our national Pharmacopœia, and the more so, since a progress has been manifested in the similar class of preparations—the medicated waters.

If, instead of directing simply to dissolve the volatile oils in alcohol, a subsequent distillation had been ordered, preparations greatly superior would have been obtained; for, by this process, the resinified portions of the volatile oils are left in the retort, while the combination of oil and alcohol becomes more intimate. A milder and mellow spirit is the result, which, however, leaves still much to be desired, when compared with the spirit prepared by distillation from the drug. To illustrate these differences practically, you will find upon the table two samples of Spiritus Cinnamomi; one made simply by dissolving the volatile oil in stronger alcohol; the other made in the same way and afterwards distilled.

In making this spirit by distilling the alcoholic solution of the oil, it becomes requisite to make it a little weaker in alcohol by increasing the water, and adding into the still either chloride of sodium or, preferably, chloride of calcium, so that the heat can be raised sufficiently to drive all the oil over. Cinnamon, of an average quality, yields about one per cent. of volatile oil; for making one pint of the spirit, about one hundred ounces of the bark would be necessary, a quantity which is entirely too large for complete exhaustion in the way indicated. But, is it requisite to have an officinal spirit of cinnamon of this strength? For medicinal purposes, would not one, much weaker in cinnamon, answer much better? and is not the officinal spirit used more by the confectioner and cook than by the physician?

Two of the spirits in question are used in the U. S. Army, and are manufactured in large quantities at the U. S. Army Laboratory at Philadelphia. I refer to Spiritus Ammoniæ aromaticus and Spiritus Lavandulæ compositus. The above considerations, together with the high price of the oils of lavender and rosemary of good quality, have induced me, with the approbation of the Director, Surgeon A. K. Smith, M. D., to prepare both spirits by distillation from the drugs. Only one—the oil of lemon—is used in making Spiritus Ammoniæ aromaticus, the reason for which is, that it can always be found in commerce of unexceptionable quality; that dried lemon peel has lost a portion of its volatile oil; that the fresh lemons cannot at all times be had at a reasonable price; and that the same, after the removal of the yellow rind, though not actually worthless for us, could not conveniently at all times be worked up into some preparation before spoiling.

I append here the formulas by which both preparations are made, and would state that they have been not only entirely satisfactory to all army surgeons whose opinions have been asked of the same, but that they consider them, and more particularly the Spiritus Lavandulæ compositus, superior to most other similar preparations heretofore furnished to the medical department of the army. Samples of both preparations will be found upon the table.

The following are the formulas for both spirits, to yield each forty gallons, the smallest quantity made at a time:

All the weights are avoirdupois.

Spiritus Ammoniæ aromaticus.

Take of Muriate of ammonia, 14 ℔s.
Carbonate of soda, 37¾ ℔s.
Oil of lemon, 50 fluidounces.
Nutmegs, ground, 5½ ℔s.
Lavender flowers, ground, 6¼ ℔s.
Stronger alcohol, 28½ gallons.
Water, 20 gallons.

Dissolve the carbonate of soda in twelve gallons of water, pour the solution into a still, add the alcohol, oil of lemon, nutmegs and lavender flowers, and macerate over night. Dissolve the muriate of ammonia in eight gallons of water, and after distillation has commenced, run the solution slowly, by means of a glass syphon, through the tubulus of the still head to near the bottom of the still. Apply heat, and condense the distillate in a glass condenser, the discharge pipe of which reaches to near the bottom of the receiving vessel, and is afterwards kept below the surface of the distillate, of which forty gallons are obtained.

Spiritus Lavandulæ compositus.

Take of Lavender flowers, 49½ ℔s.
Rosemary leaves, 16½ ℔s.
Cinnamon, 5½ ℔s.
Cloves, 1⅜ ℔s.
Nutmegs, 2¾ ℔s.
Stronger alcohol, 27¾ gallons.
Water, 20 gallons.
Tincture of Red Saunders, 1 gallon.

Grind the solid materials to a coarse powder, throw this into a distillatory apparatus, add the alcohol and water, macerate for twelve hours, and then, with a regulated heat, distil thirty-nine gallons; lastly, add the tincture of red saunders and mix.

For this purpose, the tincture of saunders is made as follows:

Tinctura Santali rubri.

Take of Red saunders in powder, 25 ℔s.
Stronger alcohol and water, of each a sufficient quantity.

Obtain by displacement, with a mixture of three parts of alcohol to one of water in the usual manner, twelve and one-half gallons of tincture.

PRACTICAL OBSERVATIONS ON THE MANUFACTURE OF OLEUM ÆTHEREUM.

BY C. LEWIS DIEHL, JR.

During the manufacture of *Oleum Æthereum,* the operator frequently meets with difficulties which are in a great measure inexplicable. With a view to alleviating these to some extent, the writer offers this paper as the result of his experience, and hopes that it may lead to further investigation by more experienced operators.

On commencing the manufacture of Oleum Æthereum, the writer had no practical experience to guide him, and, of course, had to rely on the observations and experience of others for information. Among others, the papers of Dr. E. R. Squibb, Journal of Pharmacy, vol. v. 3d Series, p. 194, and Proceedings Am. Pharm. Association, 1860, were found to give the most explicit information on the subject, and served as a guide for the comparison of results.

At the U. S. Army Laboratory, Philadelphia, the manufacture is carried on in glass retorts of the best French make, and of a capacity of seven to eight gallons. They are heated by means of a sand bath fifteen and a half to sixteen inches in diameter and twelve inches deep; the depth of the sand under the retorts is never more than half an inch, and does not come up on the sides of the retort more than about five inches. This facilitates the cooling of the retort in case it is desirable. The mixture introduced into the retort consists of equal measures of 95 per cent. alcohol and sulphuric acid, sp. gr. 1·845, care being taken to allow all the sulphate of lead to separate before introducing the mixture. The charge for a retort of seven gallons capacity is six and a half gallons; the refrigeration is effected by means of a large Liebig's condenser, and the distillate is collected in a tubulated receiver, which is so arranged that the distillate will enter through the tubulure, and the incondensible gases will pass through a tube, connected with the large end of the receiver, into the chimney. The joints are made air-tight by means of cork and India-rubber tubing. The sand baths can be heated in a very short space of time, the furnace being of an excellent construction, and the flues of which make a complete circle around the sand bath before entering the chimney, with an excellent draft. It is necessary to give a detailed description of the apparatus employed to permit of a thorough appreciation of the difficulties experienced at the laboratory.

At the suggestion of Prof. J. M. Maisch, of this laboratory, an accurate account of the temperatures at which the distillation proceeded from hour to hour, during the day, was kept for some time, with a view of ascertaining at what temperature the yield of heavy oil of wine was most abundant, and also to decide whether the troublesome frothing could be regulated and how far it was influenced by the temperature.

The following table is compiled from a series of observations as to temperature, collected during a period of three months, and represents a fair average of results:*

NUMBER.	Amount of mixture used.	Temperature at 9 o'clock.	Temperature at 10 o'clock.	Temperature at 11 o'clock.	Temperature at 12 o'clock.	Temperature at 1 o'clock.	Temperature at 2 o'clock.	Temperature at 3 o'clock.	Temperature at 4 o'clock.	Yield.
	Galls.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	oz.
1	6½	287	290	*307	298	284	289	*304	276	5⅛
2	6½	160	261	*303	*307	*313	297	282	......	5⅛
3	6½	178	*307	*306	*306	*302	297	*306	298	5½
4	6½	174	298	*307	*306	*307	291	*316	*304	4½
5	6½	190	299	*313	......	......	......	......	......	4¾
6	6½	164	......	299	*310	*306	......	......	......	4⅛
7	6½	198	*310	*305	*314	293	*306	294	275	4⅝
8	6½	116	276	298	*300	*304	296	*309	293	4⅝
9	6½	150	230	289	*301	292	288	*300	296	3½
10	6½	148	237	288	*302	293	298	293	*306	3½
11	6½	156	295	*308	*303	296	*307	*303	290	3⅓
12	6½	108	276	*302	298	*300	299	290	294	3½
13	6½	128	*300	296	287	288	207	251	......	2¾

In case of No. 5 the liquid frothed and boiled over between 11 and 12 o'clock. In that of No. 6 it boiled over between 1 and 2 o'clock.

It will be observed from the above table, that the results were very variable; yet they indicated that the quicker the temperature is brought to 300° F. and the longer it is kept above that point, the larger will be the yield. Nos. 3, 2 and 4 will fully explain the advantage of heating quickly and keeping up the temperature, while the numbers from 9 to 13 will show the disadvantage of a low temperature. Number 1 is the only instance that came to notice in which a low temperature gave a good yield.

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* In this and the following table all temperatures of 300 and above are marked *.

As regards the frothing, no very satisfactory conclusions could be arrived at from merely watching the temperature. In the cases of Nos. 5 and 6, the temperatures had been brought to 310° and above at the first heating. It was therefore thought necessary to prevent the heat from rising above 305° at the first heating. But, from results since obtained, it was observed that the temperature could frequently be raised to 315° and over, without frothing. For this reason the frothing was chiefly attributed to other causes, in conjunction with the temperature, and it was concluded, that where temperature alone could be held accountable for the frothing, it was generally above 320°. The presence of sulphate of lead may be mentioned as one of the principal causes of frothing, and this has been already observed and fully appreciated by Dr. Squibb (see Journ. of Pharm., vol. v. 3d Series, p. 197). Other circumstances, however, appear to effect the same results. During the latter part of the distillation, copious quantities of a black matter (thiomelanic acid) are formed, which, when the distillation has proceeded properly, forms a thick crust on the top of the liquid in the retort. A portion of this will frequently coat the walls of the retort, and is, in most instances, readily removed with a sponge and water or alcohol. Sometimes, however, it will adhere pertinaciously to the bottom, and can only be removed with great difficulty. When this is allowed to remain, it will almost invariably cause frothing, and, in many cases, boiling over. This can be avoided by cleaning the retort with sand and a little ether. It is generally recommended to allow the mixture of alcohol and sulphuric acid to stand twenty-four hours before using it, for the purpose of getting rid of the sulphate of lead. In the writer's experience, this time is not long enough when large quantities are used, from two to three days being necessary.

The following table has been collected from observations made since the first series of distillations, and may merit some attention:

NUMBER.	Amount of mixture used.	Fire lighted.	Reached the temp. of 300°.	Highest temp. observed.	Lowest temp. observed	Temp. at 6 o'clock P.M.	No. of times re-heated.	Boiled over at	No. of hours distilled.	Yield.
	Galls.			° F.	° F.	° F.				oz.
1	$6\frac{1}{2}$	8 A.M.	10.15 A.M.	*315	...	...	1	11.40 A.M.	3.40	$4\frac{3}{4}$
2	$6\frac{1}{2}$	8 "	11.30 "	*318	...	...	2	....	10	6
3	$6\frac{1}{2}$	8 "	10.20 "	*318	290	280	2	....	10	$6\frac{3}{4}$
4	$6\frac{1}{2}$	8 "	10.40 "	*314	290	*310	3	....	10	$6\frac{1}{4}$
5	$6\frac{1}{2}$	8 "	9.45 "	*322	...	...	1	4 P.M.	8	$5\frac{3}{4}$
6	$6\frac{1}{2}$	8 "	10.35 "	*322	...	250	2	....	10	6
7	$6\frac{1}{2}$	8 "	11.50 "	*318	...	298	1	....	10	5
8	$6\frac{1}{2}$	8 "	10.10 "	*326	...	294	2	....	10	$6\frac{1}{2}$
9	$6\frac{1}{2}$	8 "	10.35 "	*336	...	...	2	....	10	$5\frac{3}{4}$
10	$6\frac{1}{2}$	8.30 "	9.55 "	*312	...	298	2	....	9.30	$5\frac{1}{4}$
11	$6\frac{1}{2}$	8.30 "	10.10 "	*316	...	290	1	....	9.30	5
12	$6\frac{1}{2}$	7.30 "	9 "	*316	...	...	2	3.50 P.M.	8.20	$5\frac{3}{4}$
13	$6\frac{1}{2}$	7.30 "	9.30 "	*314	...	...	1	....	10.30	$5\frac{1}{4}$
14	$6\frac{1}{2}$	8 "	9.40 "	*318	...	290	3	....	10	$7\frac{1}{2}$
15	$6\frac{1}{2}$	8 "	9.50 "	*316	...	*310	3	....	10	$6\frac{1}{2}$
16	$6\frac{1}{2}$	8 "	9.30 "	*320	...	*302	2	....	10	$6\frac{1}{2}$
17	$6\frac{1}{2}$	8.15 "	10.5 "	*316	...	*300	2	....	9.45	$4\frac{1}{2}$
18	$6\frac{1}{2}$	8 "	10.5 "	*320	290	*305	2	....	10	$6\frac{1}{2}$
19	$6\frac{1}{2}$	8 "	10 "	*322	294	...	1	2.20 P.M.	6.20	5
20	$6\frac{1}{2}$	8 "	10 25 "	*322	290	284	2	....	10	6
21	$6\frac{1}{2}$	9 "	11.30 "	*322	...	...	2	....	9	$5\frac{3}{4}$
22	$6\frac{1}{2}$	11.30 "	1.45 P.M.	*328	*300	*310	2	....	9	7
23	$6\frac{1}{2}$	12 M.	2 "	*311	*300	*302	2	....	9	7
24	$6\frac{1}{2}$	11.30 A.M.	1.20 "	*312	*300	...	3	8 P.M.	8.30	7
25	$6\frac{1}{2}$	11 "	2 "	*318	...	...	2	....	10	$7\frac{1}{4}$
26	$6\frac{1}{2}$	1.30 P.M.	3.30 "	*317	...	...	2	....	10.30	$5\frac{3}{4}$
27	$6\frac{1}{2}$	8 A.M.	10.20 A.M.	*314	290	*315	2	....	10	6
28	$6\frac{1}{2}$	8 "	10.20 "	*322	294	...	2	2.30 P.M.	6.30	6
29	$6\frac{1}{2}$	8 "	10.10 "	*320	*300	*310	2	....	10	$6\frac{1}{2}$
30	$6\frac{1}{2}$	11.30 "	1.25 P.M.	*312	*300	...	2	....	10	$6\frac{1}{2}$

It is to be regretted that the table could not be kept more fully, but during the rush of business at the time this was impossible. Sufficient, however, has been collected in it to justify the conclusions that have been drawn. The chief points of interest in the table are—

1. The time at which the temperature reached 300° ;
2. The highest temperature attained ;
3. The lowest point the temperature fell to after it had reached 300° ;
4. The number of heatings it was subjected to ;

5. The temperature at 6 o'clock, P. M.;
6. The yield.

The management of the fires in the foregoing operations was such that the temperatures would rise rapidly to about 295°, the draft door was then closed until 300° to 305° were reached, when the fires were dampened by means of ashes. The temperature would then generally rise to 310° to 315°. As soon as the temperature had fallen again to between 300° and 305°, heat was again applied until it began to rise, when the fires were again dampened; the temperature would then again rise and reach sometimes as high as 320°. The management of the heat requires great care and constant attention, for, if the fire is kept strong until the temperature reaches 310°, the liquid in the retort is very apt to froth over. In managing the fires, the operator should be able to raise the heat or withdraw it at very short notice. To this end it is best to work without the dampers; all that is necessary when the fire is to be dampened, will be to close the draft door, open the fire door and cover the live coal with coal if the fire is moderate, or with ashes if it be very strong. The advantage of keeping the damper open will be obvious here, for a cold draft will enter at the fire door and cause more rapid cooling. The fire can be raised again at short notice by opening the draft door and closing the fire door.

The formation of a crust on the top of the liquid in the retort is considered favorable to the distillation, as it appears to prevent the frothing up almost entirely. In one case (No. 9, table 2) the temperature had attained 336° without causing frothing over, while in other cases where the crust had become accidentally broken and the temperature was much lower, the liquid frothed over like a flash, scarcely leaving time to save the distillate. In all cases, except the last-mentioned, the frothing takes place slowly, affording ample time to make the proper disconnections. The froth was generally allowed to rise within one-half inch of the neck before the connections were loosened, and the retort was not entirely disconnected until it began to enter the neck. It was observed that if the bubbles thrown up during the earlier period of the distillation were very small, the liquid was very apt to froth; if, on the contrary, the bubbles were large, this seldom happened, and, in fact, in the only cases where it did so, the cause could be traced to high heating. It is well, therefore, to watch the retorts very closely, and to manage the fires carefully when the boiling takes place in small bubbles. The temperature should, however, in no case be allowed to fall below 300°, even if it is at the risk of frothing, for very good yields have been obtained where frothing occurred.

The distillate obtained generally consisted of two layers, the heavier containing water saturated with sulphurous acid, the lighter consisting of an ethereal solution of oil of wine. Occasionally, however, the positions were reversed, the solution of oil of wine taking the lower stratum, while the watery liquid occupied the upper; and several instances have occurred when three layers were formed, the upper and lower consisting of solution of oil of wine, while the centre was occupied by the watery liquid. The oil of wine was separated from its solution by exposure to a dry current of air for from twelve to twenty-four hours. The liquid was then found to have separated again into two layers, and was mixed with about three times its volume of distilled water, transferred to a separatory funnel and allowed to remain at rest for several hours. The oil was then drawn off and the process of washing repeated until it no longer affected litmus.

Oil of wine, as thus obtained, is a limpid, oily liquid, of a pale straw color, having a pungent and aromatic taste, and an odor reminding of the artificial fruit essences. No very accurate examinations as to specific gravity were made. In three cases noted, they were respectively 1·065, 1·095, 1·100, and, as far as recollected in a number of other cases, they ranged between 1·080 and 1·100.

On the basis of the foregoing observations, it may be convenient to state, in a more condensed form, the precautions necessary in the distillation of heavy oil of wine.

"The retort should be set in the sand bath with but a thin layer of sand under it, and but a few inches up its sides, which facilitates its rapid cooling when desired.

"The fires should be managed without the damper; all that is necessary being to close the draft door, open the fire door and cover the fire with coal or ashes, according to circumstances.

"The presence of sulphate of lead in the mixture, or of thiomelanic acid on the sides of the retort, has a tendency to cause frothing, and should be avoided.

"The temperature should be raised rapidly to 300° or 305° F., after which the fire is immediately to be dampened. If the fire has been very strong, it should not be raised above 300°; if only moderate, it may be raised to 305°. The temperature will then generally rise spontaneously to from 310° to 315°.

"The temperature should be kept above 300° as long as possible, and this may be done by re-heating as often as it falls to near 300°. As soon as the temperature begins to rise again, the fire must be dampened; for, if the heating be continued until the temperature reaches 310°, it is very apt to rise above 320° and cause frothing. It should always be avoided to raise the temperature above 320°, as the yield of oil of wine is not increased by raising it above that point, and it is more apt to cause frothing.

"If the liquid froths, the first step must be to pull the fire out of the furnace and then to fan the retort vigorously, which frequently prevents frothing over."

In conclusion, it may not be uninteresting to give an account of the results of three months' distillation, from March 17th to June 17th.

The total amount of sulphuric acid used was 5485 lbs.; of alcohol, sp. gr. ·809, it was 367¾ galls. The yield was 558⅛ oz. avoirdupois, making 1 ounce of heavy oil of wine to every 70 ounces by weight of alcohol and 157 ounces of sulphuric acid used. The number of days on which distillation was carried on is fifty-four, during which time one hundred and two distillations were made. Of these, fifteen frothed over, out of which three distillations were lost, leaving ninety-nine distillations from which yields were obtained, and making the average yield from each retort 5·52 avoirdupois ounces.

From an article by Dr. E. R. Squibb, Proceed. Am. Pharm.

Association, 1860, the following yield is taken to compare the yield at the U. S. A. Laboratory,—viz.:

The amount of sulphuric acid used was 1664 lbs.; the amount of alcohol was 100½ galls. = 668 lbs. The yield was 87 fluidounces, which, calculating the sp. gr. of the oil at 1·1, is about 96 avoirdupois ounces. The number of distillations was twenty-one, making an average for each distillation of 4·14 fluidounces, or 4·54 avoirdupois ounces. To make one avoirdupois ounce it required 111 ounces of alcohol and 173 ounces sulphuric acid sp. gr. 1·845.

The following table will plainly show the difference of results:

	Dr. E. R. Squibb.	U. S. A. Laboratory.
Amount of sulph. acid required to make one avoir. ounce of oil of wine..................................	173 Avoir. ounces.	157 Avoir. ounces.
Amount of alcohol required for the same..................................	111 " "	70 " "
Average yield from each distillation..................................	4·54 " "	5·52 " "

U. S. Army Laboratory, Philada., Pa., Sept. 16th, 1864.

PLAN AND DESCRIPTION OF BALANCE FOR APOTHECARIES' USES.

BY THOMAS S. WIEGAND, PHILADELPHIA.

The greatest injuries which the fine balances, in use by Apothecaries, sustain, are doubtless consequent upon the efforts of those who attempt to clean them; it was in view of this fact that the accompanying plan and description of a balance suitable to the various requirements of the prescription counter were prepared.

The essential points of such a balance may be said to be accuracy, indicating freely one-hundredth of a grain, simplicity of construction, exclusion of dust and flies from the beam and relief of the knife-edges when not in use; a balance possessing

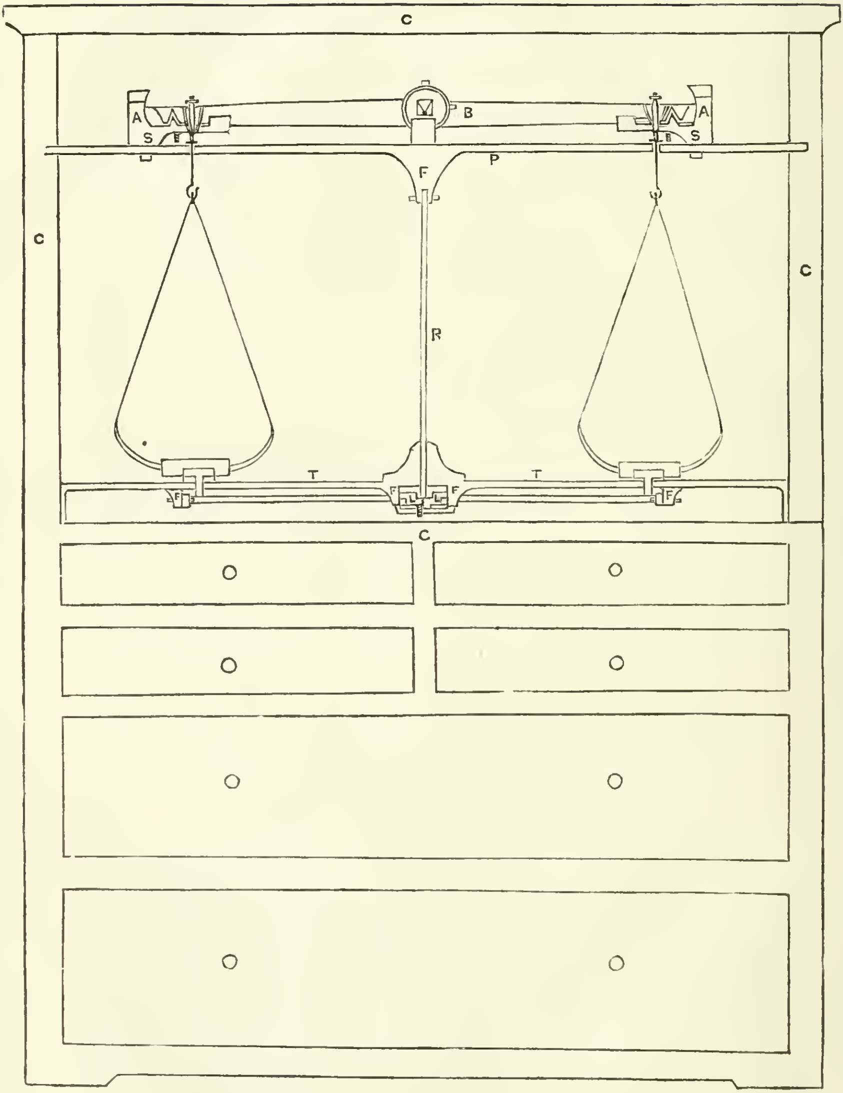

C
A
S
E
B
A
S
E
P
F
C
C
R
T
T
F
F
F
F
C

Fig. 2.

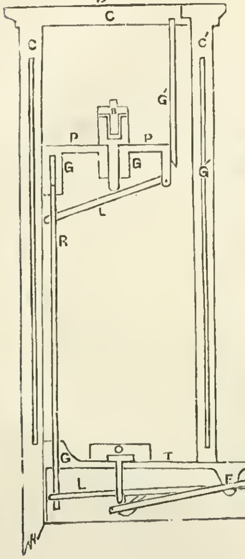


Fig. 5.

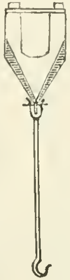


Fig. 3.

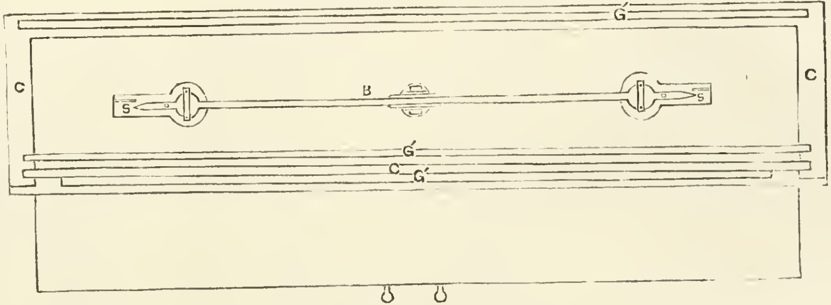
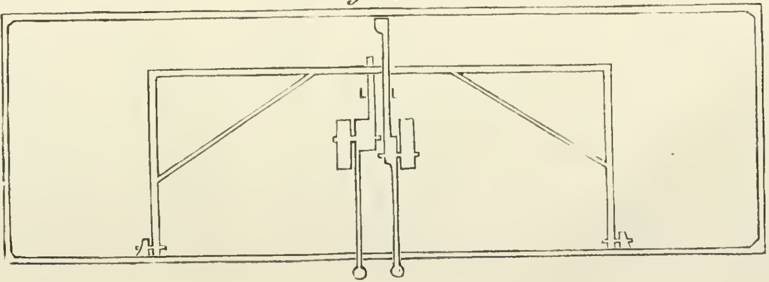


Fig. 4.



these requisites has been in common use in the writer's store for seven or eight years, and is now in every way reliable. During this time it has not cost anything for necessary repairs.

Figure 1. Represents balance and case in section looking at the front of same.

CCC. Case.

B. Beam.

P. Plate supporting beam and appendages.

L. Levers.

F. Fulcrum of lever raising the beam, motion being communicated by the rod R from levers L under iron table of the balance.

T. Iron table of balance being bottom of the case.

S. Supports for the beam when not in use.

Figure 2. CCC. Case.

LL. Levers for raising beam.

GGG. Guides to steady the planes for centre knife-edges and ends of connecting rod.

G′G′G′. Plates of glass for principal case and inside beam case.

FF. Fulcra for raising levers.

Figure 3. CC. Case.

B. Beam.

S. Supports to beam when not in use.

G′G′G′. Plates of glass to principal and inside beam case.

Figure 4. LL. Levers for moving frame to raise the pallettes which prevent the oscillations of the beam.

Figure 5. Stirrup supporting the bows which carry the scale pans.

The beam (figure 1) is supported on a plate of iron or brass inserted in grooves cut into the sides of the case, and forming a division in the case nearly from the front of it to the extreme back, the edge of it resting against the plate glass G′.

The planes, upon which the centre knife-edges rest, are elevated by a series of levers, working underneath the iron table of the scale case, the motion being carried up at the back of the case, leaving the entire table clear of everything but the scale dishes, it is thus much more easily cleaned. The knife-edges at each end of the beam are relieved of their load by the stirrups resting in appropriate slots made in the supports SS; the beam itself, when not in use, rests in grooves of appropriate shape cut in the supports SS, and is brought to its proper place by two cones fitting into corresponding conical cavities near the ends of the beam, just before it is brought into use; the upper part of the case, in front of the plate P, has a plate of glass, G′, extending to the top of the case, thus insulating the beam and its supports from the rest of the case.

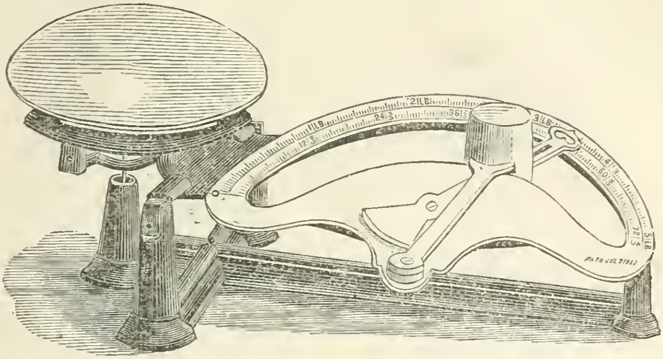
The other figures are sufficiently explained by the reference letters.

The top of the case is made with an opening in the centre, which permits the beam to be removed to clean or adjust it more easily than could otherwise be done.

DESCRIPTION OF A NEW PATENT BALANCE FOR USE WITHOUT WEIGHTS.

BY EDWARD PARRISH.

The primary object of this invention is to save the expense and annoyance attendant on the loss of weights in ordinary retail business; but it has been, at my suggestion, adapted to the use of the apothecary by introducing upon the disk a scale of Apothecaries' weights along with the ordinary avoirdupois scale, so that in every instance the weight in troy-ounces and in commercial or avoirdupois ounces and pounds is made to appear at a glance. The advantage of this arrangement will be apparent to every pharmaceutist. It obviates the necessity of keeping at hand an extra set of large officinal weights, often difficult to obtain and always expensive; it also facilitates the weighing of larger quantities at a single weighing than is practicable with the ordinary cup weights,—an advantage in the preparation of fluid extracts and syrups.



When the pointer is at 0, the brass disk and its supports are balanced by the plate and its supports, the free movement of the lever being facilitated by four steel knife edges at the fulcrum of the lever and at the bearings under the plate.

The size here figured is suited to weighing five pounds avoirdupois when the pointer is set at the point indicating that amount on the extreme right, or seventy-two troy ounces, which is indicated very near the same point on the inside scale. The principle, which is not new in weighing, will be understood from the drawing, and will, I think, be found very convenient as applied to this instrument.

CONSTITUTION

OF THE

American Pharmaceutical Association.

PREAMBLE.

Whereas, The advancement of pharmaceutical knowledge and the elevation of the professional character of Apothecaries and Druggists throughout the United States are dear to us in common with all well disposed pharmaceutists; and *whereas*, a large portion of those in whose hands the practice of pharmacy now exists, are not properly qualified for the responsible offices it involves, chiefly by reason of the many difficulties that impede the acquirement of a correct knowledge of their business:—

Therefore, We the members of a Convention now met at Philadelphia, [September, 1852,] composed of Apothecaries and Druggists from different sections of the Union, and from all the Colleges and Societies therein existing, with the object of deliberating on the condition of our profession, do hereby resolve and constitute ourselves into a permanent Association, to meet annually, at such times and places as may hereafter be determined, for more effectually accomplishing the objects for which we are now assembled, and do now adopt the following

CONSTITUTION.

Article I.

This Association shall be called the American Pharmaceutical Association. Its aim shall be to unite the educated and reputable Pharmaceutists and Druggists of the United States in the following objects:

1st. To improve and regulate the drug market, by preventing the importation of inferior, adulterated or deteriorated drugs, and by detecting and exposing home adulteration.

2d. To establish the relations between druggists, pharmaceutists, physicians and the people at large, upon just principles, which shall promote the public welfare and tend to mutual strength and advantage.

3d. To improve the science and the art of pharmacy by diffusing scientific knowledge among apothecaries and druggists, fostering pharmaceutical literature, developing talent, stimulating discovery and invention, and encouraging home production and manufacture in the several departments of the drug business.

4th. To regulate the system of apprenticeship and employment so as to prevent, as far as practicable, the evils flowing from deficient training in the responsible duties of preparing, dispensing, and selling medicines.

5th. To suppress empyricism, and as much as possible to restrict the dispensing and sale of medicines to regularly educated druggists and apothecaries.

Article II.—*Of the Members.*

Section 1. Every pharmaceutist or druggist, of good moral and professional standing, whether in business on his own account, retired from business, or employed by another, who, after duly considering the objects of the Association and the obligations of its Constitution, is willing to subscribe to them, is eligible to membership.

Section 2. The mode of admission to membership shall be as follows: Any person eligible to membership may apply to any member of the Executive Committee, who shall report his application to the said Committee. If after investigating his claims they shall approve his election, they shall at the earliest time practicable report his name to the Association, and he may be elected by two-thirds of the members present, on ballot.

Section 3. No person shall become a member of this Association until he shall have signed the Constitution, and paid his annual contribution for the current year. All persons who become members, shall be considered as permanent members, but may be expelled for improper conduct by a vote of two-thirds of the members present at any annual meeting.

Section 4. Every member shall pay into the hands of the Treasurer the sum of two dollars as his yearly contribution, and is liable to lose his right of membership by neglecting to pay said contribution for three successive years. Members shall be entitled, on the payment of three dollars, to receive a certificate of membership signed by the President, Vice Presidents, and Secretary, covenanting to return the same to the proper officer on relinquishing their connection with the Association.

Section 5. Every local Pharmaceutical Association shall be entitled to five delegates in the annual meetings, who, if present, become members of the Association on signing the Constitution, without being balloted for.

Section 6. Pharmaceutists, Chemists, and other scientific men who may be thought worthy of the distinction, may be elected honorary members upon the same conditions and under the same rules as appertain to active members. They shall not, however, be required to contribute to the funds, nor shall they be eligible to hold office or to vote at the meetings.

Section 7. Members who have paid their annual contributions for ten successive years shall be considered life members, and exempt from their yearly payments, and entitled to a certificate to that effect.

ARTICLE III.—*Of the Officers.*

Section 1. The officers shall be a President, two or more Vice Presidents, a Recording Secretary, a Corresponding Secretary, and a Treasurer, who shall be elected annually, and shall hold office until an election of successors.

Section 2. The President shall preside at the meetings, and administer the rules of order usual in deliberative assemblies. He shall nominate all special committees, except a majority of the members present direct a resort to balloting or other means.

He shall sign the certificates of membership, approve all foreign correspondence, and countersign orders on the Treasurer.

He shall present at each annual meeting a report of the operations of the Association during the year, with such information pertaining to its condition and prospects and the object it has in view, together with such suggestions for its future management as may seem to him proper.

Section 3. In case of the temporary absence or inability of the President, his duties shall devolve on one of the Vice Presidents in the order of their names.

Section 4. The Recording Secretary shall keep fair and correct minutes of the proceedings of the meetings, and carefully preserve on file all reports, essays, and papers of every description received by the Association, copies or abstracts of which shall be furnished for publication as may be required.

He shall furnish the chairman of every special committee with a list of its members and a copy of the minute of its appointment, and shall notify every member of the time and place of each annual meeting. He shall be a member of the Executive Committee.

Section 5. The Corresponding Secretary shall conduct all correspondence directed by the Association, and reply to all communications addressed to it in its recess. He shall from time to time address local Associations, members, and others possessed of information likely to be of interest to the Association, and report such correspondence to the Committee on the Progress of Pharmacy, of which he shall be a member.

Section 6. The Treasurer shall collect and take charge of the funds of the Association, and shall also hold and issue the certificates of membership. He shall pay no monies unless by the order of the chairman of one of the standing or of a special committee, authorized to appropriate funds of the Association, such order to be countersigned by the President.

He shall present a statement of his accounts at each annual meeting that they may be audited. He shall also report to the Executive Committee, previous to each annual meeting, the names of such members as have failed to pay their annual contributions for three years, and also the names of such as have failed to return their certificates of membership after having been officially disconnected with the Association, and duly notified to do so.

ARTICLE IV.—*Of the Standing Committees.*

Section 1. There shall be five standing committees elected annually—an

Executive Committee, a Committee on the Progress of Pharmacy, a Committee on the Drug Market, each to consist of five members; a Committee on Scientific Queries and a Business Committee, each to consist of three members.

Section 2. The Executive Committee, of which the Recording Secretary shall be one of the members, shall have charge of the revision of the roll, the investigation of applications for membership, and the publication of the Proceedings. They shall report at each meeting a revised roll of members, with appropriate notices of deceased members, also the names of any who, having become disconnected with the Association, refuse to return their certificates of membership as provided by this Constitution.

The annual publication of the Proceedings shall contain the corrected roll of members, full minutes of the several sittings, the Reports of the President and of the Committees, together with such addresses, scientific papers, discussions, notices of new processes and preparations as the Executive Committee may deem worthy of insertion. At least one copy shall be furnished each member of the Association.

Section 3. The Committee on the Progress of Pharmacy, of which the Corresponding Secretary shall be one of the members, shall report annually to the Association on the improvements in Chemistry, Practical Pharmacy and the collateral branches, and on any new works bearing on these subjects published in this country or in Europe.

Section 4. The Committee on Scientific Queries shall report near the close of each Annual Meeting a proper number of questions of scientific and practical interest, the answers to which may advance the interests of Pharmacy, and shall procure the acceptance of as many such questions for investigation as may be practicable, and report before the next succeeding Annual Meeting.

Section 5. The Business Committee shall be charged with the transmission of unfinished business from one Annual Meeting to another, and with collecting, arranging and expediting the business throughout the various sessions of the Annual Meetings.

ARTICLE V.—*Of the Meetings.*

Section 1. The meetings shall be held annually, or as the Association may from time to time determine; provided, that in case of failure of this from any cause, the duty of calling the Association together shall devolve upon the President, or one of the Vice-Presidents, with the advice and consent of the Executive Committee.

Section 2. At the opening of each annual meeting, the President, or, in case of his absence, one of the Vice-Presidents, shall call the meeting to order and preside until after an election of officers; in case the President and Vice-Presidents are absent, this duty shall devolve on the chairman of the Executive Committee, or in his absence on any member chosen by vote of those present.

In the absence of the Recording Secretary the President shall appoint a Secretary, pro tempore.

The order of business at the first session of each annual meeting shall be as follows:

1st. The appointment by the President of a committee of three persons to examine credentials, and report the names of those duly credited.

2d. The Executive Committee shall report the names of new members and of persons present recommended for membership, who shall be immediately balloted for.

3d. The roll of those in attendance, as thus completed, shall be called by the Secretary.

4th. The reports of the Standing and Special Committees shall be read by their titles, or in full, and laid on the table for future consideration.

5th. A committee to nominate officers for the ensuing year shall be appointed, consisting of one nominated by each delegation in attendance, and three members appointed by the President, from among those not delegated, to report at the opening of the next session.

The first session shall close with the reading of the President's Annual Report, and referring any portion requiring the action of Committees.

After the first session, the order of business shall be determined by the nature of the subjects presented and by the consent of the majority.

Section 3. During periods fixed by vote for scientific discussion and the exhibition of specimens and processes, the ordinary rules of parliamentary bodies shall be suspended, but at other times shall be enforced by the presiding officer, from whose decisions, however, appeals may be taken if required by five members, and the meeting shall thereupon decide without debate.

A motion reduced to writing and seconded shall be open to discussion, and while it is before the meeting no motion shall be received unless to amend, divide, commit, to lay on the table, postpone or to adjourn ; and a motion to adjourn shall be decided without debate.

On the call of any member, the yeas and nays shall be ordered, when every member shall vote, unless excused by a majority of those present, and the names and manner of voting shall be entered on the Minutes.

ARTICLE VI.

This Constitution may be altered or amended by a vote of three-fourths of the members present at any regular meeting, and notice to alter or amend the same shall be given at least one sitting before a vote thereupon.

Approving of the objects of the American Pharmaceutical Association, I am desirous of joining it in membership ; and having read its Constitution I hereby signify my approval of it, and subscribe to it.

____

Address ______________________________

I hereby agree to return my certificate of membership in the American Pharmaceutical Association to the Treasurer of that body, if I shall hereafter cease to be connected in membership with it.

....

TESTIMONIALS.

The undersigned being personally acquainted with
of testify to his moral character, his skill as a practical Druggist and Pharmaceutist, and his professional probity and good standing, and they recommend him for membership in the American Pharmaceutical Association.

Name.	Profession.	Address.

ROLL OF MEMBERS.

(Deceased Members in Italics.)

HONORARY MEMBERS.

Daniel B. Smith,	Philadelphia,	Pennsylvania,	1856
Thomas Farrington,	Boston,	Massachusetts,	1856
Montgomery J. Bailey, M. D.	New York,	New York,	1856
George B. Wood, M. D.,	Philadelphia,	Pennsylvania,	1857
Franklin Bache, M. D.,	Philadelphia,	Pennsylvania,	1857
Elias Durand,	Philadelphia,	Pennsylvania,	1857

ACTIVE MEMBERS.

Henry T. Cummings, M. D.,	Portland,	Maine,	1853
Edmund Dana, Jr.,	Portland,	Maine,	1859
Walter F. Phillips,	Portland,	Maine,	1859
William Atwood,	Portland,	Maine,	1859
Sargent P. Coe,	Portland,	Maine,	1859
N. S. Harlow,	Bangor,	Maine,	1859
John G. Cook,	Lewistown,	Maine,	1859
William Baker,	Brunswick,	Maine,	1859
J. R. Carpenter,	Calais,	Maine,	1861
Charles A. Tufts,	Dover,	New Hampshire,	1856
O. Gilman Dort,	Keene,	New Hampshire,	1858
Charles A. Merrill,	Exeter,	New Hampshire,	1858
George S. Kendrick,	Lebanon,	New Hampshire,	1858
Joseph H. Thacher,	Portsmouth,	New Hampshire,	1859

Edward H. Rollins,	Concord,	New Hampshire,	1859
John F. Rollins,	Concord,	New Hampshire,	1859
Julius Cone,	Concord,	New Hampshire,	1859
James Morgan,	Concord,	New Hampshire,	1859
George Moore,	Great Falls,	New Hampshire,	1859
Rufus W. Stevens,	Great Falls,	New Hampshire,	1859
George L. Dearborn,	New Market,	New Hampshire,	1853
S. P. Peck,	Bennington,	Vermont,	1853
J. C. Bingham.	St. Johnsbury,	Vermont,	1853
Chauncy L. Case,	Brandon,	Vermont,	1859
E. A. Morse,	Rutland,	Vermont,	1859
E. A. Pond,	Rutland,	Vermont,	1859
L. L. Dutcher,	St. Albans,	Vermont,	1859
Frederick Dutcher,	St. Albans,	Vermont,	1859
Samuel M. Colcord,	Boston,	Massachusetts,	1852
Joseph Burnett,	Boston,	Massachusetts,	1852
Samuel R. Philbrick,	Boston,	Massachusetts,	1852
Daniel Henchman,	Boston,	Massachusetts,	1853
Thomas Resticaux,	Boston,	Massachusetts,	1853
Andrew Geyer,	Boston,	Massachusetts,	1853
Emery Souther,	Boston,	Massachusetts,	1853
T. Larkin Turner,	Boston,	Massachusetts,	1853
Henry W. Lincoln,	Boston,	Massachusetts,	1853
William A. Brewer,	Boston,	Massachusetts,	1853
Thomas Hollis,	Boston,	Massachusetts,	1853
Ashel Boyden,	Boston,	Massachusetts,	1853
Henry D. Fowle,	Boston,	Massachusetts,	1853
James S. Melvin,	Boston,	Massachusetts,	1853
William W. Goodwin,	Boston,	Massachusetts,	1853
Charles T. Carney,	Boston,	Massachusetts,	1853
Robert R. Kent,	Boston,	Massachusetts,	1855
Abijah Littlefield,	Boston,	Massachusetts,	1856
Augustus P. Melzar,	Boston,	Massachusetts,	1856
Charles H. Atwood,	Boston,	Massachusetts,	1856
James Gorden,	Boston,	Massachusetts,	1857
Theodore Metcalf,	Boston,	Massachusetts,	1857
David Roberts,	Boston,	Massachusetts,	1858
William Brown,	Boston,	Massachusetts,	1858
Oliver H. Webber,	Boston,	Massachusetts,	1858
George D. Towne,	Boston,	Massachusetts,	1858
D. B. Kidder,	Boston,	Massachusetts,	1858

Andrew R. Fox,	Boston,	Massachusetts,	1858
Granville M. Clark,	Boston,	Massachusetts,	1858
George D. Ricker,	Boston,	Massachusetts,	1858
C. H. Lyon, Jr.,	Boston,	Massachusetts,	1858
I. Bartlett Patten,	Boston,	Massachusetts,	1858
Leopold Babo,	Boston,	Massachusetts,	1859
John C. Howe,	Boston,	Massachusetts,	1859
Levi G. Dodge,	Boston,	Massachusetts,	1859
William J. Cutler,	Boston,	Massachusetts,	1859
E. Waldo Cutler,	Boston,	Massachusetts,	1859
B. F. Brown,	Boston,	Massachusetts,	1859
William D. Miller,	Boston,	Massachusetts,	1859
Theodore S. Harris,	Boston,	Massachusetts,	1859
George H. Chapman,	Boston,	Massachusetts,	1859
Theodore Wheeler,	Boston,	Massachusetts,	1859
Orlando Tompkins,	Boston,	Massachusetts,	1859
Isaac T. Campbell,	Boston,	Massachusetts,	1859
Thomas Doliber,	Boston,	Massachusetts,	1859
Charles Clarke,	Boston,	Massachusetts,	1859
G. C. Wilson,	Boston,	Massachusetts,	1859
B. O. Wilson,	Boston,	Massachusetts,	1859
John T. Brown,	Boston,	Massachusetts,	1859
Michael H. Gleeson,	Boston,	Massachusetts,	1859
James A. Gleeson,	Boston,	Massachusetts,	1859
Joseph T. Brown,	Boston,	Massachusetts,	1859
Moses D. Colby,	Boston,	Massachusetts,	1859
George W. Woodbridge,	Boston,	Massachusetts,	1859
Samuel H. Woods,	Boston,	Massachusetts,	1859
Henry Warren,	Boston,	Massachusetts,	1859
John Butterworth,	Boston,	Massachusetts,	1860
Joshua G. Wilbur,	Boston,	Massachusetts,	1860
Elijah Smalley,	Boston,	Massachusetts,	1860
Levi Tower, Jr.,	Boston,	Massachusetts,	1860
Edward H. Fernald,	Boston,	Massachusetts,	1860
Thomas S. Moffitt,	Boston,	Massachusetts,	1861
Laban Beal,	Boston,	Massachusetts,	1861
Benj. Gilpatrick, Jr.,	Boston,	Massachusetts,	1862
George F. H. Markoe,	Boston,	Massachusetts,	1863
Abraham S. Wiley,	Cambridgeport,	Massachusetts,	1857
Henry Thayer,	Cambridgeport,	Massachusetts,	1858
William Gay,	Cambridgeport,	Massachusetts,	1858

A. R. Bailey,	Cambridgeport,	Massachusetts,	1859
A. H. Ramsey,	Cambridgeport,	Massachusetts,	1859
Joel S. Orne,	Cambridgeport,	Massachusetts,	1859
Francis D. Hardy, Jr.,	Cambridgeport,	Massachusetts,	1859
David Scott,	Worcester,	Massachusetts,	1855
Nelson R. Scott,	Worcester,	Massachusetts,	1859
James L. Burbank,	Worcester,	Massachusetts,	1859
M. S. McConville,	Worcester,	Massachusetts,	1859
Thomas A. McConville,	Worcester,	Massachusetts,	1864
Anthony S. Jones,	Newburyport,	Massachusetts,	1853
Charles A. Nolcine,	Newburyport,	Massachusetts,	1858
Samuel A. Smith,	Newburyport,	Massachusetts,	1859
John Buck,	Chelsea,	Massachusetts,	1855
William T. S. Cardy,	Chelsea,	Massachusetts,	1859
Charles E. Field,	Chelsea,	Massachusetts,	1859
John P. Lynam,	Chelsea,	Massachusetts,	1860
Edw. G. Frothingham, Jr.,	Haverhill,	Massachusetts,	1859
George A. Kimball,	Haverhill,	Massachusetts,	1859
H. M. Whitney,	Lawrence,	Massachusetts,	1859
B. K. Bliss,	Springfield,	Massachusetts,	1859
Edmund Bigelow,	Springfield,	Massachusetts,	1860
Daniel F. White,	Charlestown,	Massachusetts,	1859
Benjamin F. Stacey,	Charlestown,	Massachusetts,	1860
C. C. Bixby,	N. Bridgewater,	Massachusetts,	1859
Warren Tapley,	Lynn,	Massachusetts,	1859
Benjamin Proctor,	Lynn,	Massachusetts,	1859
David Howarth,	Andover,	Massachusetts,	1862
Thomas A. Sweetser,	South Danvers,	Massachusetts,	1859
James Emerton,	Salem,	Massachusetts,	1859
James B. Lane,	Fitchburgh,	Massacnusetts,	1853
John B. Arnold,	Fitchburgh,	Massachusetts,	1859
Francis O. Bigelow,	Medford,	Massachusetts,	1859
Samuel Kidder, Jr.,	Lowell,	Massachusetts,	1859
David Coggin,	Lowell,	Massachusetts,	1864
Joseph L. Moffatt,	Roxbury,	Massachusetts,	1860
Charles E. Savelle,	Roxbury,	Massachusetts,	1860
Francis Tinker,	Leominster,	Massachusetts,	1860
F. A. Weber,	Woonsocket,	Massachusetts,	1860
Charles F. Rogers,	Newton,	Massachusetts,	1860
C. M. Whildon,	Pittsfield,	Massachusetts,	1860
Dexter D. Geyer,	Gloucester,	Massachusetts,	1857

William H. Ware,	Gloucester,	Massachusetts,	1859
Eben Blatchford,	Rockport,	Massachusetts,	1857
B. W. Conant,	Woburn,	Massachusetts,	1858
George W. Berrian, Jr.,	North Andover,	Massachusetts,	1857
F. T. Whiting,	Great Barrington,	Massachusetts,	1863
Robert J. Taylor,	Newport,	Rhode Island,	1859
Albert L. Calder,	Providence,	Rhode Island,	1859
Alfred C. Dana,	Providence,	Rhode Island,	1859
Albert J. Congdon,	East Greenwhich,	Rhode Island,	1860
Henry F. Fish,	Waterbury,	Connecticut,	1852
Nathan Dikeman,	Waterbury,	Connecticut,	1859
James M. B. McNary,	Hartford,	Connecticut,	1859
Thomas Sisson,	Hartford,	Connecticut,	1860
Samuel E. Noyes,	New Haven,	Connecticut,	1859
E. E. Knapp,	Norwalk,	Connecticut,	1860
Nathan F. Peck,	Willimantic,	Connecticut,	1861
Llewellyn S. Haskell,	New York City,	New York,	1852
George D. Coggeshall,	New York City,	New York,	1852
John Meakim,	New York City,	New York,	1852
Eugene Dupuy,	New York City,	New York,	1852
C. B. Guthrie,	New York City,	New York,	1852
Junius Gridley,	New York City,	New York,	1853
J. B. Merrick,	New York City,	New York,	1853
James S. Aspinwall,	New York City,	New York,	1855
Benjamin Canavan,	New York City,	New York,	1855
John Canavan,	New York City,	New York,	1855
John Milhau,	New York City,	New York,	1855
John P. Dodge,	New York City,	New York,	1855
F. A. Hegeman,	New York City,	New York,	1855
James T. Maxwell,	New York City,	New York,	1855
Oliver Hull,	New York City,	New York,	1855
Isaac Coddington,	New York City,	New York,	1855
Frederick Hale,	New York City,	New York,	1855
Frederick Thompson,	New York City,	New York,	1856
H. T. Kiersted,	New York City,	New York,	1856
William F. Henry,	New York City,	New York,	1856
J. W. Bowers,	New York City,	New York,	1856
George Syme,	New York City,	New York,	1857
Henry Haviland,	New York City,	Yew York,	1857
George W. De la Vergne,	New York City,	New York,	1857
John Faber,	New York City,	New York,	1857
Alexander Cushman,	New York City,	New York,	1858

William J. Oliffe,	New York City,	New York,	1858
Thomas T. Green,	New York City,	New York,	1858
Ray B. Easterbrook,	New York City,	New York,	1858
Henry King,	New York City,	New York,	1858
William Egerton,	New York City,	New York,	1858
William M. Somerville,	New York City,	New York,	1858
Henry A. Cassebeer,	New York City,	New York,	1858
George O. Bridges,	New York City,	New York,	1858
Edward L. Milhau,	New York City,	New York,	1858
Lewis T. Lazell,	New York City,	New York,	1858
Edward H. Marsh,	New Yook City,	New York,	1858
John H. Currie,	New York City,	New York,	1858
Andrew J. Parker,	New York City,	New York,	1858
Samuel N. Stebbins,	New York City,	New York,	1858
Henry R. Haydock,	New York City,	New York,	1858
Lucian F. Wheeler,	New York City,	New York,	1858
John C. Hart,	New York City,	New York,	1858
Robert A. Sands,	New York City,	New York,	1858
William Hegeman,	New York City,	New York,	1858
Fredrick V. Rushton,	New York City,	New York,	1858
John D. Dix,	New York City,	New York,	1858
William A. Gellatly,	New York City,	New York,	1858
J. H. Westerfield,	New York City,	New York,	1858
Walter S. Coon,	New York City,	New York,	1858
Augustus C. Evans,	New York City,	New York,	1858
Henry Kiersted,	New York City,	New York,	1858
Raymond Gravesend,	New York City,	New York,	1859
L. Leroy,	New York City,	New York,	1859
Henry Steele,	New York City,	New York,	1859
William Wright, Jr.,	New York City,	New York,	1859
James H. Anderson,	New York City,	New York,	1859
P. Wendover Bedford,	New York City,	New York,	1859
John W. Sheddon,	New York City,	New York,	1859
George Thurber, M. D.	New York City.	New York,	1859
W. Neergaard,	New York City,	New York,	1859
F. F. Mayer,	New York City,	New York,	1859
Corydon E. Tyler,	New York City,	New York,	1859
Alexander V. Blake,	New York City,	New York,	1860
Samuel J. Billings,	New York City,	New York,	1860
William J. Watson,	New York City,	New York,	1860
William M. Giles,	New York City,	New York,	1860

John Carle, Jr.,	New York City,	New York,	1860
Jesse M. Sands,	New York City,	New York,	1860
Jabez H. Hazard,	New York City,	New York,	1860
James Weaver,	New York City,	New York,	1860
George W. Southwick,	New York City,	New York,	1860
E. L. Johnson,	New York City,	New York,	1860
William J. Darbey,	New York City,	New York,	1860
Theodore Schumann,	New York City,	New York,	1860
Otto Laist,	New York City,	New York,	1860
George G. Porter,	New York City,	New York,	1860
George E. Sheils,	New York City,	New York,	1860
Warren B. Gardiner,	New York City,	New York,	1860
Gustav Ramsperger,	New York City,	New York,	1860
Augustine Presinger,	New York City,	New York,	1860
George S. Peduzzi,	New York City,	New York,	1861
B. H. Reinold,	New York City,	New York,	1861
Adolph G. Dunn,	New York City,	New York,	1862
James S. Higgins,	New York City,	New York,	1862
Theobald Frohwein,	New York City,	New York,	1862
W. Fisher,	New York City,	New York,	1862
A. W. Gabaudan,	New York City,	New York,	1862
Daniel C. Robbins,	New York City,	New York,	1862
Alexander H. Everett,	New York City,	New York,	1863
Henry B. Morris,	New York City,	New York,	1864
Tristram W. Metcalf,	Brooklyn,	New York,	1857
Alexander Hudnut,	Brooklyn,	New York,	1857
Thomas Whitehorn,	Brooklyn,	New York,	1857
Edward R. Squibb, M. D.,	Brooklyn,	New York,	1858
Robert J. Davies,	Brooklyn,	New York,	1858
George F. Ayling,	Brooklyn,	New York,	1858
George C. Close,	Brooklyn,	New York,	1858
J. Lindley Pyle,	Brooklyn,	New York,	1859
Cyrus Pyle,	Brooklyn,	New York,	1859
Luther Atwood,	Brooklyn,	New York,	1859
William H. Page,	Brooklyn,	New York,	1860
Thomas Kinghorne,	Brooklyn,	New York,	1860
Peter D. Leys,	Brooklyn,	New York,	1860
L. S. Hubbard,	Brooklyn,	New York,	1860
Richard Forester,	Brooklyn,	New York,	1860
George C. Leys,	Brooklyn,	New York,	1860
W. E. P. Baylis,	Brooklyn,	New York,	1860

Richard J. Owens,	Brooklyn,	New York,	1860
John McDonald,	Brooklyn,	New York,	1860
Paul Balluff,	Brooklyn,	New York,	1860
Victor Heidenreich,	Brooklyn,	New York,	1860
Francis M. Bassett,	Brooklyn,	New York,	1861
John A. Niebrugge,	Brooklyn,	New York,	1861
J. F. Conway,	Brooklyn,	New York,	1862
Spencer O. Hatfield,	Brooklyn,	New York,	1864
Gilbert Long,	Brooklyn,	New York,	1864
Sylvester M. Carle,	Brooklyn,	New York,	1864
George J. McKay,	Mt. Vernon,	New York,	1864
R. S. McMurdy, M. D.,	Albany,	New York,	1861
William H. MacRae,	Factoryville,	New York,	1861
S. G. Welling,	New Rochelle,	New York,	1860
William E. Hagan,	Troy,	New York,	1860
William G. Stephens,	Yonkers,	New York,	1860
Robert J. Toplis,	Yonkers,	New York,	1863
Eugene Alex. Houston,	Yonkers,	New York,	1864
Aug. Theodore Moith,	Fishkill Landing,	New York,	1860
H. A. Tilden,	New Lebanon,	New York,	1858
A. I. Mathews,	Buffalo,	New York,	1855
William H. Peabody,	Buffalo,	New York,	1857
H. A. Blauw,	Rochester,	New York,	1856
Alfred S. Lane,	Rochester,	New York,	1857
James T. King,	Middletown,	New York,	1859
George B. Fish,	Saratoga Springs,	New York,	1860
Erastus N. Champlin,	Saratoga Springs,	New York,	1864
James Stratton,	Bordentown,	New Jersey,	1859
William Thomas,	Jersey City,	New Jersey,	1855
Alfred J. Shipley,	Jersey City,	New Jersey,	1859
Peter V. Coppuck,	Mount Holly,	New Jersey,	1857
A. S. White,	Mount Holly,	New Jersey,	1860
C. H. Dalrymple,	Morristown,	New Jersey,	1860
William Ball,	Elizabeth City,	New Jersey,	1860
Wm. J. Allison,	Burlington,	New Jersey,	1862
Charles Ellis,	Philadelphia,	Pennsylvania,	1852
William Procter, Jr.,	Philadelphia,	Pennsylvania,	1852
Alfred B. Taylor,	Philadelphia,	Pennsylvania,	1852
Edward Parrish,	Philadelphia,	Pennsylvania,	1852
Peter J. Hassard,	Philadelphia,	Pennsylvadia,	1853
Samuel S. Garrigues,	Philadelphia,	Pennsylvania,	1855

Henry C. Blair,	Philadelphia,	Pennsylvania,	1855
John H. Ecky,	Philadelphia,	Pennsylvania,	1856
M. Henry Kollock,	Philadelphia,	Pennsylvania,	1856
Frederick L. John,	Philadelphia,	Pennsylvania,	1856
Thomas Weaver,	Philadelphia,	Pennsylvania,	1856
John M. Maisch,	Philadelphia,	Pennsylvania,	1856
Dillwyn Parrish,	Philadelphia,	Pennsylvania,	1857
Samuel F. Troth,	Philadelphia,	Pennsylvania,	1857
Ambrose Smith,	Philadelphia,	Pennsylvania,	1857
Thomas P. James,	Philadelphia,	Pennsylvania,	1857
Charles Bullock,	Philadelphia,	Pennsylvania,	1857
Thomas S. Wiegand,	Philadelphia,	Pennsylvania,	1857
Samuel N. James,	Philadelphia,	Pennsylvania,	1857
Evan T. Ellis,	Philadelphia,	Pennsylvania,	1857
Louis M. Emanuel,	Philadelphia,	Pennsylvania,	1857
Wilson H. Pile, M. D.,	Philadelphia,	Pennsylvania,	1857
Samuel S. Bunting,	Philadelphia,	Pennsylvania,	1857
T. Morris Perot,	Philadelphia,	Pennsylvania,	1857
Asher S. Leidy,	Philadelphia,	Pennsylvania,	1857
William H. Pratt,	Philadelphia,	Pennsylvania,	1857
Edward Donnelly, M. D.,	Philadelphia,	Pennsylvania,	1857
Henry Steiner,	Philadelphia,	Pennsylvania,	1857
Hennell Stevens,	Philadelphia,	Pennsylvania,	1857
Samuel Chapman, M. D.,	Philadelphia,	Pennsylvania,	1857
Edward H. Hance,	Philadelphia,	Pennsylvania,	1857
Charles H. Eggert,	Philadelphia,	Pennsylvania,	1857
George M. Snowden,	Philadelphia,	Pennsylvania,	1857
George Cooke,	Philadelphia,	Pennsylvania,	1857
William R. Warner,	Philadelphia,	Pennsylvania,	1857
O. S. Hubbell,	Philadelphia,	Pennsylvania,	1857
Henry N. Rittenhouse,	Philadelphia,	Pennsylvania,	1857
Thomas Lancaster,	Philadelphia,	Pennsylvania,	1857
J. Lindsey O'Neal,	Philadelphia,	Pennsylvania,	1858
William J. Jenks,	Philadelphia,	Pennsylvania,	1858
E. Raphael Perot,	Philadelphia,	Pennsylvania,	1858
W. B. Thompson,	Philadelphia,	Pennsylvania,	1858
J. A. Heintzelman,	Philadelphia,	Pennsylvania,	1858
Adolphus F. Neynaber,	Philadelphia,	Pennsylvania,	1859
Adam H. Wilson,	Philadelphia,	Pennsylvania,	1859
Benjamin F. Johnson,	Philadelphia,	Pennsylvania,	1859
Thos. A. Lancaster,	Philadelphia,	Pennsylvania,	1859

Daniel S. Jones,	Philadelphia,	Pennsylvanis,	1859
James T. Shinn,	Philadelphia,	Pennsylvania.	1860
George J. Scattergood,	Philadelphia,	Pennsylvania,	1860
Charles Shivers,	Philadelphia,	Pennsylvania,	1860
William Evans, Jr.,	Philadelphia,	Pennsylvania,	1860
Benjamin J. Crew,	Philadelphia,	Pennsylvania,	1860
J. Lewis Crew,	Philadelphia,	Pennsylvania,	1860
Henry Bower,	Philadelphia,	Pennsylvania,	1860
Thomas R. Coombe,	Philadelphia,	Pennsylvania,	1860
Abram Alburger, Jr.,	Philadelphia,	Pennsylvania,	1860
Edward R. Fell,	Philadelphia,	Pennsylvania,	1862
Frederick A. Keffer,	Philadelphia,	Pennsylvania,	1862
Frederick Rollman,	Philadelphia,	Pennsylvania,	1862
George Y. Shoemaker,	Philadelphia,	Pennsylvania,	1862
John C. Savery,	Philadelphia,	Pennsylvania,	1862
C. Lewis Diehl,	Philadelphia,	Pennsylvania,	1863
John C. Everson,	Philadelphia,	Pennsylvania,	1863
Talbot C. Murray,	Philadelphia,	Pennsylvania,	1863
George M. Smyser,	Philadelphia,	Pennsylvania,	1863
Henry J. Weber,	Philadelphia,	Pennsylvania,	1863
Clayton N. Wills,	Philadelphia,	Pennsylvania,	1864
Charles F. Gristock,	Philadelphia,	Pennsylvania,	1864
Edward C. Jones,	Philadelphia,	Pennsylvania,	1864
William C. Bakes,	Philadelphia,	Pennsylvania,	1864
Samuel Campbell,	Philadelphia,	Pennsylvania,	1864
S. Mason McCollin,	Philadelphia,	Pennsylvania,	1864
George Edward Jeannot,	Philadelphia,	Pennsylvania,	1864
Edward H. Buehler,	Philadelphia,	Pennsylvania,	1864
William Ellis,	Philadelphia,	Pennsylvania,	1864
Alfred Mellor,	Philadelphia,	Pennsylvania,	1864
George H. Ashton,	Philadelphia,	Pennsylvania,	1864
Theodore St. Clair,	Philadelphia,	Pennsylvania,	1864
George W. Mowbray,	Titusville,	Pennsylvania,	1860
Charles A. Bannvart,	Harrisburg,	Pennsylvania,	1856
William Heyser, Jr.,	Chambersburg,	Pennsylvania,	1856
William Loeffler,	Chambersburg,	Pennsylvania,	1857
Charles A. Heinitseh,	Lancaster,	Pennsylvania,	1857
Leander Neal,	Lancaster,	Pennsylvania,	1858
John C. Long,	Lancaster,	Pennsylvania,	1863
William H. Squire,	Germantown,	Pennsylvania,	1862
M. M. Selfridge,	Bethlehem,	Pennsylvania,	1858

Wm. M. Guilford, M. D.,	Lebanon,	Pennsylvania,	1857
Joseph L. Lemberger,	Lebanon,	Pennsylvania,	1858
E. T. Miller,	York,	Pennsylvania,	1859
Washington Laycock,	Danville,	Pennsylvania,	1857
J. B. Moore,	Danville,	Pennsylvania,	1860
J. A. Wolf,	Wrightsville,	Pennsylvania,	1860
Geo. A. Kelley,	Alleghany,	Pennsylvania,	1864
Samuel K. Norgrave,	Pittsburg,	Pennsylvania,	1857
George W. Weyman,	Pittsburg,	Pennsylvania,	1858
Charles H. Super,	Pittsburg,	Pennsylvania,	1858
Harmar D. Scully,	Pittsburg,	Pennsylvania,	1858
James E. Cunningham,	Pittsburg,	Pennsylvania,	1860
H. M. Pettit,	Pittsburg,	Pennsylvania,	1860
Jon. C. Mattern,	Pittsburg,	Pennsylvania,	1860
Jacob T. Haehnlen, Jr.,	Pittsburg,	Pennsylvania,	1860
Richard Tener, Jr.,	Pittsburg,	Pennsylvania,	1863
Alfred J. Rankin,	Pittsburg,	Pennsylvania,	1864
Simeon Johnston,	Pittsburg,	Pennsylvania,	1864
Joseph Abel,	Pittsburg,	Pennsylvania,	1864
J. C. Hughes,	Pottsville,	Pennsylvania,	1862
A. W. Newton,	Bristol,	Pennsylvania,	1862
Henry W. Lesley,	Bristol,	Pennsylvania,	1862
Francis P. Green,	Bellefonte,	Pennsylvania,	1864
W. L. McCorkle,	Columbia,	Pennsylvania,	1857
A. H. Grimshaw,	Wilmington,	Delaware,	1858
John P. Toner,	Wilmington,	Delaware,	1859
Ferris Bringhurst,	Wilmington,	Delaware,	1862
David Stewart, M. D.,	Baltimore,	Maryland,	1852
A. P. Sharp,	Baltimore,	Maryland,	1855
George W. Andrews,	Baltimore,	Maryland,	1856
James M. Bowers,	Baltimore,	Maryland,	1856
L. Phillips,	Baltimore,	Maryland,	1856
J. Jacob Smith,	Baltimore,	Maryland,	1856
Charles Caspari,	Baltimore,	Maryland,	1856
John W. Barry,	Baltimore,	Maryland,	1856
William Reed,	Baltimore,	Maryland,	1856
J. C. Rogers,	Baltimore,	Maryland,	1856
J. H. Lemmon,	Baltimore,	Maryland,	1856
Joseph Roberts,	Baltimore,	Maryland,	1856
E. J. Russell.	Baltimore,	Maryland,	1856
J. Faris Moore,	Baltimore,	Maryland,	1856

Edward C. Gilpin,	Baltimore,	Maryland,	1856
Oscar Monsarrat,	Baltimore,	Maryland,	1856
G. Davidge Wood,	Baltimore,	Maryland,	1856
J. B. Baxley,	Baltimore,	Maryland,	1856
Samuel McPherson,	Baltimore,	Maryland,	1856
James Balmer,	Baltimore,	Maryland,	1956
William S. Thompson,	Baltimore,	Maryland,	1856
William Caspari,	Baltimore,	Maryland,	1866
T. W. Tomlinson,	Baltimore,	Maryland,	1856
Thomas H. Hilsby,	Baltimore,	Maryland,	1856
J. J. Thomsen,	Baltimore,	Maryland,	1856
R. H. Dryden,	Baltimore,	Maryland,	1856
George J. Fetter,	Baltimore,	Maryland,	1856
C. Wiseman,	Baltimore,	Maryland,	1856
N. H. Jennings,	Baltimore,	Maryland,	1857
Elisha H. Perkins,	Baltimore,	Maryland,	1857
E. Kloman,	Baltimore,	Maryland,	1858
A. Vogeler,	Baltimore,	Maryland,	1858
Lewis Dohme,	Baltimore,	Maryland,	1859
H. A. Elliott,	Baltimore,	Maryland,	1859
John Block,	Baltimore,	Maryland,	1860
John S. Benzinger,	Baltimore,	Maryland,	1860
James E. McDaniel,	Baltimore,	Maryland,	1860
William H. Brown,	Baltimore,	Maryland,	1863
Alexander E. Brown,	Baltimore,	Maryland,	1863
Charles E. Dohme,	Baltimore,	Maryland,	1863
Gustavus Dohme,	Baltimore,	Maryland,	1863
S. Ellwood Morrison,	Baltimore,	Maryland,	1863
Joseph C. O'Brien,	Baltimore,	Maryland,	1863
John G. Nagle,	Baltimore,	Maryland,	1863
Thos. E. Kirby,	Baltimore,	Maryland,	1863
S. Robinson Coale,	Baltimore,	Maryland,	1863
Alonzo Lilly, Jr.,	Baltimore,	Maryland,	1863
William W. Cunningham,	Baltimore,	Maryland,	1863
E. Walton Russell,	Baltimore,	Maryland,	1863
Columbus V. Emich,	Baltimore,	Maryland,	1863
John F. Hancock,	Baltimore,	Maryland,	1863
John P. Muth,	Baltimore,	Maryland,	1863
John H. Winkleman,	Baltimore,	Maryland,	1864
Jonas Winter,	Hagerstown,	Maryland,	1863
Joseph Y. Skinner,	Salisbury,	Maryland,	1864

John L. Kidwell,	Georgetown,	Dist. Columbia,	1856
Valentine Harbaugh,	Washington,	Dist. Columbia,	1856
H. H. McPherson,	Washington,	Dist. Columbia,	1856
Joseph B. Walsh,	Washington,	Dist. Columbia,	1856
F. S. Walsh,	Washington,	Dist. Columbia,	1856
W. H. Gilman,	Washington,	Dist. Columbia,	1856
John W. Nairn,	Washington,	Dist. Columbia,	1856
D. S. Dyson,	Washington,	Dist. Columbia,	1856
Samuel F. Tyson,	Washington,	Dist. Columbia,	1857
Daniel B. Clarke,	Washington,	Dist. Columbia,	1857
James N. Callan,	Washington,	Dist. Columbia,	1857
Edward Shoemaker,	Washington,	Dist. Columbia,	1858
T. C. McIntyre, M.D.,	Washington,	Dist. Columbia,	1858
R. A. Payne,	Washington,	Dist. Columbia,	1858
S. R. Sylvester,	Washington,	Dist. Columbia,	1858
John L. Love,	Washington,	Dist. Columbia,	1858
Joseph B. Moore,	Washington,	Dist. Columbia,	1858
Cornelius Boyle,	Washington,	Dist. Columbia,	1858
Hervey Herman,	Washington,	Dist. Columbia,	1858
S. B. Waite,	Washington,	Dist. Columbia,	1858
Lewis M. Smith,	Washington,	Dist. Columbia,	1858
Albert G. Palmer,	Washington,	Dist. Columbia,	1858
Francis L. Gaither,	Washington,	Dist. Columbia,	1860
Giles G. C. Simms,	Washington,	Dist. Columbia,	1860
Francis X. Dooley,	Washington,	Dist. Columbia,	1863
R. C. Lineaweaver,	Washington,	Dist. Columbia,	1864
R. H. Stabler, M.D.,	Alexandria,	Virginia,	1856
J. W. Bowling,	Alexandria,	Virginia,	1857
John A. Milburn,	Alexandria,	Virginia,	1858
Joseph Laidley,	Richmond,	Virginia,	1852
Alexander Duval,	Richmond,	Virginia,	1852
S. M. Zachrisson,	Richmond,	Virginia,	1853
T. Roberts Baker,	Richmond,	Virginia,	1856
James Cooke,	Fredericksburg,	Virginia,	1856
Fayette W. Johnson,	Fredericksburg,	Virginia,	1858
Silas Whitehead,	Lynchburg,	Virginia,	1856
J. Hartley Bunn,	Lynchburg,	Virginia,	1859
F. M. Wells,	Charlotte,	Virginia,	1856
Charles K. Gallagher,	Washington,	North Carolina,	1857
Richard B. Saunders,	Chapel Hill,	North Carolina,	1858
John Thomson,	Sumter,	South Carolina,	1856

H. J. Macdonald,	Barnwell C. H.	South Carolina,	1856
R. H. Land,	Newberry C. H.	South Carolina,	1859
Lewis T. Sillyman.	Columbia,	South Carolina.	1859
A. A. Solomons,	Savannah,	Georgia,	1858
W. W. Solomons.	Savannah,	Georgia,	1858
Robert Battey,	Rome,	Georgia,	1856
W. H. Warner,	Rome,	Georgia,	1859
J. B. W. Nowlin,	Rome,	Georgia,	1859
John M. Clark,	Milledgeville,	Georgia,	1857
Fleming G. Grieve,	Milledgeville,	Georgia,	1859
John S. Pemberton,	Columbus,	Georgia,	1857
J. A. Taylor,	Atlanta,	Georgia,	1859
W. A. Lansdell,	Atlanta,	Georgia,	1859
Robert J. Massey,	Atlanta,	Georgia,	1859
B. M. Smith,	Atlanta,	Georgia,	1859
J. Henry Zeilin,	Macon,	Georgia,	1859
O. F. Cawthon,	Mobile,	Alabama,	1860
Fairman S. Taber,	Huntsville,	Alabama,	1861
F. Glackmeyer,	Montgomery,	Alabama,	1856
P. C. Candidus,	Aberdeen,	Mississippi,	1857
Crawford Blackwood,	Columbus,	Mississippi,	1857
Matthew F. Ash,	Jackson,	Mississippi,	1856
William Pryor Creecy,	Vicksburg,	Mississippi,	1860
Charles C. Thornton, M. D.,	Sharon,	Mississippi,	1861
A. E. Richards,	Plaquemine,	Louisiana,	1855
James A. Lee,	New Iberia,	Louisiana,	1856
William Longshaw, Jr.,	Bayou Sara,	Louisiana.	1858
John Beynon,	Shrevesport,	Louisiana,	1858
John H. Pope,	New Orleans,	Louisiana,	1860
William B. Chapman,	Cincinnati,	Ohio,	1852
C. Augustus Smith,	Cincinnati,	Ohio,	1852
A. M. Stevens,	Cincinnati.	Ohio,	1854
W. J. M. Gordon,	Cincinnati,	Ohio,	1854
Wm. S. Merrell,	Cincinnati,	Ohio,	1854
Lewis Rehfuss,	Cincinnati,	Ohio,	1854
J. V. Whetstone,	Cincinnati,	Ohio,	1854
J. W. Hannaford,	Cincinnati,	Ohio,	1854
William H. Adderly.	Cincinnati,	Ohio,	1854
W. H. Coolidge,	Cincinnati,	Ohio,	1854
Asbury Kent,	Cincinnati,	Ohio,	1854
Theodore Marsh,	Cincinnati,	Ohio,	1854

William R. Smith,	Cincinnati,	Ohio,	1854
John Scott,	Cincinnati,	Ohio,	1854
William C. Arons,	Cincinnati,	Ohio,	1854
E. S. Wayne,	Cincinnati,	Ohio,	1854
Paul Reinlein,	Cincinnati,	Ohio,	1856
Oliver F. Gordon,	Cincinnati,	Ohio,	1857
Charles A. Junghanns,	Cincinnati,	Ohio,	1858
George A. Sheusler,	Cincinnati,	Ohio,	1858
W. F. Clency,	Cincinnati,	Ohio,	1859
Andrew J. Tully,	Cincinnati,	Ohio,	1862
John C. Gerhard,	Cincinnati,	Ohio,	1862
L. Groneweg,	Cincinnati,	Ohio,	1864
A. W. Foertmyer,	Cincinnati,	Ohio,	1864
John Keeshan,	Cincinnati,	Ohio,	1864
G. A. Hiller,	Cincinnati,	Ohio,	1864
F. A. Crowther,	Cincinnati,	Ohio,	1864
Alfred C. Hill,	Cincinnati,	Ohio,	1864
I. L. A. Greve,	Cincinnati,	Ohio,	1864
Samuel B. Allen,	Cincinnati,	Ohio,	1864
A. Wagner,	Cincinnati,	Ohio,	1864
H. F. Reum,	Cincinnati,	Ohio,	1864
A. Rutenick,	Cincinnati,	Ohio,	1864
E. Berghousen,	Cincinnati,	Ohio.	1864
A. Fennel,	Cincinnati,	Ohio,	1864
Ernst Kampfmueller,	Cincinnati,	Ohio,	1864
Chas. Kampfmueller,	Cincinnati,	Ohio,	1864
James W. Nadand,	Cincinnati,	Ohio,	1864
Uriah F. Shalter,	Cincinnati,	Ohio,	1864
E. Kunckel,	Cincinnati,	Ohio,	1864
George Merrell,	Cincinnati,	Ohio,	1864
Henry Gers,	Cincinnati,	Ohio,	1864
C. H. Bode,	Cincinnati,	Ohio,	1864
O. Heineman,	Cincinnati,	Ohio,	1864
Wm. Karrmann,	Cincinnati,	Ohio,	1864
E. W. Crowther,	Cincinnati,	Ohio,	1864
T. D. Wells,	Cincinnati,	Ohio,	1864
H. H. Hill,	Cincinnati,	Ohio,	1864
A. M. Johnston,	Cincinnati,	Ohio,	1864
James Markward,	Cincinnati,	Ohio,	1864
Wm. Tilley,	Cincinnati,	Ohio,	1864
A. Salpins,	Cincinnati,	Ohio,	1864

A. Langenbeck,	Cincinnati,	Ohio,	1864
L. Witzell,	Cincinnati,	Ohio,	1864
W. J. Fritsch,	Cincinnati,	Ohio,	1864
W. E. Reifsnider,	Cincinnati,	Ohio,	1864
John McK. Walker,	Cincinnati,	Ohio,	1864
Hiram Maguire,	Cincinnati,	Ohio,	1864
W. H. Durkee,	Cincinnati,	Ohio,	1864
B. F. Oxley,	Cincinnati,	Ohio,	1864
Matthew Yoston,	Cincinnati,	Ohio,	1864
Michael Parr,	Cincinnati,	Ohio,	1864
S. L. Hayden,	Cincinnati,	Ohio,	1864
J. G. Fratz,	Cincinnati,	Ohio,	1864
A. Hottendorf,	Cincinnati,	Ohio,	1864
George Eger,	Cincinnati,	Ohio,	1864
S. B. Tomlinson,	Cincinnati,	Ohio,	1864
W. H. Klayer,	Cincinnati,	Ohio,	1864
Jos. H. Debolt,	Cincinnati,	Ohio,	1864
Griffith Rees,	Cincinnati,	Ohio,	1864
C. M. Helman,	Cincinnati,	Ohio,	1864
Otto Lippert,	Cincinnati,	Ohio,	1864
H. M. Merrill,	Cincinnati,	Ohio,	1864
Charles Foertmyer,	Cincinnati,	Ohio,	1864
Wm. Snyder,	Cincinnati,	Ohio,	1864
George W. Willcox,	Columbia,	Ohio,	1864
George H. Fickhardt,	Circleville,	Ohio,	1864
Wm. H. Shuey,	Springfield,	Ohio,	1864
J. W. Dietrich,	Dayton,	Ohio,	1856
William Fiske,	Cleveland,	Ohio,	1857
E. W. Sackrider,	Cleveland,	Ohio,	1859
J. F. Grossklaus,	Navarre,	Ohio,	1859
Hamilton Creighton,	Xenia,	Ohio,	1854
Wm. R. Smith,	Hillsborough,	Ohio,	1854
J. H. Larwill, Jr.,	Columbia,	Tennessee,	1858
Frederick Stearns,	Detroit,	Michigan,	1855
T. R. Spence,	Detroit,	Michigan,	1857
Otto Leuschner,	Detroit,	Michigan,	1857
Lewis E. Higby,	Detroit,	Michigan,	1858
Samuel P. Duffield,	Detroit,	Michigan,	1859
George M. Wheeler,	Detroit,	Michigan,	1860
William Johnston,	Detroit,	Michigan,	1860
Robert F. Lattimer,	Jackson,	Michigan,	1857

John T. Fuller,	Ann Arbor,	Michigan,	1857
Uriah B. Wilson,	Ann Arbor,	Michigan,	1859
Robert C. Wardell,	Battle Creek,	Michigan,	1860
George P. Glazier,	Adrian,	Michigan,	1863
Thomas H. Barr,	Terre Haute,	Indiana,	1853
John A. Child,	Madison,	Indiana,	1856
B. F. Scribner,	New Albany,	Indiana,	1858
George W. Sloan,	Indianapolis,	Indiana,	1857
Charles Pefferman,	Peru,	Indiana,	1859
C. F. G. Meyer,	Fort Wayne,	Indiana,	1860
W. J. Luck,	Vincennes,	Indiana,	1859
A. Samson,	Richmond,	Indiana,	1864
Edwin O. Gale,	Chicago,	Illinois,	1857
William H. Gale,	Chicago,	Illinois,	1857
Charles Heckman,	Chicago,	Illinois,	1857
James D. Paine,	Chicago,	Illinois,	1857
M. M. De Levis,	Chicago,	Illinois,	1859
George M. Washburn,	Chicago,	Illinois,	1859
George Buck,	Chicago,	Illinois,	1860
Wm. F. Blocki,	Chicago,	Illinois,	1863
F. Mahla, Ph. D.,	Chicago,	Illinois,	1864
Alb. E. Ebert,	Chicago,	Illinois,	1864
James M. Mill,	Chicago,	Illinois,	1864
E. H. Sargent,	Chicago,	Illinois,	1864
N. Gray Bartlett,	Chicago,	Illinois,	1864
Thos. J. Covell,	Springfield,	Illinois,	1864
E. H. Price, M. D.,	Tamaroa,	Illinois,	1863
Robert Thompson,	Bloomington,	Illinois,	1860
George Blinkhorn,	Rock Island,	Illinois,	1860
Edwin R. Smith,	Monmouth,	Illinois,	1862
G. T. Chamberlain,	St. Louis,	Missouri,	1853
Eugene L. Massot,	St. Louis,	Missouri,	1857
James O'Gallagher,	St. Louis,	Missouri,	1858
J. Chadwick Moody,	St. Louis,	Missouri,	1858
Alexander Leitch,	St. Louis,	Missouri,	1858
Enno Sander,	St. Louis,	Missouri,	1858
W. H. Dornin,	St. Louis,	Missouri,	1858
Isaac E. Jones,	St. Louis,	Missouri,	1858
Samuel D. Hendel,	St. Louis,	Missouri,	1858
Arthur Leitch,	St. Louis,	Missouri,	1860
H. W. Scheffer,	St. Louis,	Missouri,	1863

W. H. Crawford,	St. Louis,	Missouri,	1864
Theodore Kalb,	St. Louis,	Missouri,	1864
Hubert Primm,	Carondelet,	Missouri,	1864
John C. Parr,	Covington,	Kentucky,	1856
D. B. Miller,	Covington,	Kentucky,	1864
H. R. Miller,	Covington,	Kentucky,	1864
John T. Hanning,	Covington,	Kentucky,	1864
H. A. Hughes,	Louisville,	Kentucky,	1857
J. T. Barnett,	Danville,	Kentucky,	1859
L. P. Stone,	Newport,	Kentucky,	1864
John Jackson,	Knoxville,	Tennessee,	1857
Samuel W. Osgood,	Davenport,	Iowa,	1858
Wm. Kent,	Fort Dodge,	Iowa,	1864
Jos. L. Parker,	Fort Dodge,	Iowa,	1864
C. F. G. Collins,	Beloit,	Wisconsin,	1859
John R. Drake,	Milwaukie,	Wisconsin,	1860
Harry C. Morris,	St. Paul,	Minnesota,	1859
W. Sherman Potts,	St. Paul,	Minnesota,	1859
Charles L. Bache,	San Francisco,	California,	1852
William B. Little,	San Francisco,	California,	1857
Louis D. Lanzwiert,	San Francisco,	California,	1859
Charles Hodge,	San Francisco,	California,	1859
George S. Dickey,	San Francisco,	California,	1859
George E. Hinckly,	San Francisco,	California,	1859
Charles E. Hinckly,	San Francisco,	California,	1859
William H. Keith,	San Francisco,	California,	1859
James G. Steele,	San Francisco,	California,	1859
Robert Hall,	San Francisco,	California,	1859
James H. Widdber,	San Francisco,	California,	1859
William H. Brigham,	San Francisco,	California,	1859
Charles P. Pollard,	Marysville,	California,	1859
F. T. Maynard,	Petaluma,	California,	1864
Robert J. Brown,	Leavenworth,	Kansas,	1862
George C. Hunt, Jr.,	Frederickton,	N.Brunsw'k,N.S.,	1859
William Saunders,	London,	Canada West,	1860
George J. Waugh,	Hamilton,	Canada West,	1862
N. Cressman,	Waterloo,	Canada West,	1863
James B. Heyl,	Hamilton,	Bermuda,	1863

INDEX.

Aceta 285
Acetanilide 160
Acetum Opii 79
  Scillæ 79
Acid, benzoic 154
  camphoric 153
  carbolic 127
  chelidonic 154
  chromic 124, 146
  erucic 154
  gallic 154
   estimation 179
  hippuric, in urine 172
  hydrocyanic 125
   in bitter almond water 180
  hydriodic, dilute 76
  hydrochloric 136
  hydrofluoric 137
  kinic 153
  kinovic 105
  lauric 153
  leucic 154
  nitric 134
   estimation of 175
  nitrous 134
  oxalic 154
   poisonous effects of 169
  perbromic 136
  permanganic 143
  phospho-molybdic 148
  phosphoric, estimation of 175
Acid, picric 153
  pyrogallic 154
  sulphurous 77
   solution 88
  sulphuric 135
   estimation of 176
  tannic 126
   estimation of 179
   odor 255
  tartaric, in wines 180
  uric 154
   concretions 172
Acids, organic 126, 153, 179
  and halogens 175
Aconitia 129
Aconitum napellus 95
Actinic power of light, measuring of 147
Adulteration of powdered gum arabic 73
  of powdered tartaric acid. 74
  of wax 117
Ailanthus glandulosa 98
Albumen 167
  precipitated by camphor. 181
Alcohol 128, 155
  economy in use of 72
  methylic 156
Alcohols 127, 155
Aldehyde 156
Alkalies 176
  and their compounds 120

Alkaline citrates dissolve metallic oxides 154
Alkaloids, organic 128, 158, 180
  qualitative analysis of 180
Almond oil, adulteration of 80
Alumina 143, 177
Aluminæ and Potassæ sulphas 122
Aluminium 143
  bronze for surgical instruments 144
Amber 158
Amendments to constitution 30
  adopted 45
Ammonia, acetate of 76
  production of 149
Ammonium 140
  chloride of 140
  iodide of 140
  sulphocyanide of 140
Amygdalus communis 101
Amyle, nitrite 128
Amyloid substance in liver 170
Anacardiaceæ 98
Anilina 159
  constitution of 159
  estimation of 181
Aniline blue 159
  dyes 159
Antiaris toxicaria 112
Antimony, estimation of 179
  mirror of 149
Apis mellifica 117
Apocynaceæ 109
Apparatus 70
  for determining alcoholic strength of wines, 72
  for gelatine capsules 73
Application for membership, form for 325
Aqua Amygdalæ amaræ 74
  laurocerasi 75
  rosæ 74
Arseniates, pyro- and meta- 149
Arsenic, error in Marsh's test 177
  hydride 148
  in sulphuric acid 148
  testing for 177
Arseniuretted hydrogen, poisoning by 148
Artanthe elongata 110
Artemisia absinthium 106
Artocarpus integrifolia 112
Assay balances 174
  of French brandy 291
  of sherry wine 296
  of whiskey 294
Atmospheric air, liquids dissolving 134
  carbonic acid in 134
Atropia, decomposition of 162
  method of applying 89
  test for 162
Auditing committee appointed 33
  report of 35
Aves 118

Bache, Dr. F., obituary notice 22
Bakes, W. C., on plasters 230
Balance, assay 174
  for apothecaries 316
  without weights 318
Baptisia tinctoria 99
Baryta salts, poisonous effects of 169
  permanganate 141
  sulphate 141
Bayberry bark 204
Bedford, P. W., report of Corresponding Secretary 187
Beeswax 203
Benzine 152
  liniment 88
Berberidaceæ 95
Berberina 161
Bile, acids of 170
Bibron's bromine mixture 85
Bismuth, recovery from type metal 149
Bismuthi oxidum 124
  subnitras 124
  subcarbonas 124
Bitters rendered tasteless 93
Blood, analysis of 169
  coagulation 169
  electricity of 169
Boletus laricis 115

- Bos taurus ... 116
- Bottles for poisons ... 92
- Bougies ... 90
- Brandy ... 128
  - assay of French ... 291
  - reactions of ... 78
  - substitute ... 257
- *Bridges, Prof. Robt.*, southern prickly ash bark ... 270
- Bromides ... 121, 136
- Bromine ... 120, 136
  - with chlorine, estimation of ... 176
- Butter, test for copper ... 145
- Byttneraceæ ... 97

- Cæsium ... 139
- Caffeidina ... 161
- Calamus for insects ... 92
- Calcium ... 141
- Camphor, action of nitric acid on 158
  - powdered ... 73
  - solubility in water ... 212
- Camphora officinarum ... 110
- Cannabis indica, resin of ... 244
  - sativa ... 112
- Cantharis vesicatoria ... 118
- Caprifoliaceæ ... 102
- Capsicum ... 262
- Capsules, copaiba and cubebs ... 90
- Carbohydrates ... 163
- Carbohydrides ... 151
- Carbon ... 135
  - bisulphuret ... 120
- Carbonic oxide by vegetation ... 173
- Cassia fistula ... 100
- Castor oil, tasteless ... 91
- Cataplasms ... 290
- Caulophyllum thalictroides ... 96
- Cauterizers ... 89
- Cement ... 71
  - for microscopic objects ... 91
- Cerates ... 87, 289
- Cereals, effects of age on grains ... 173
  - fungous growths on ... 115
- Charcoal, powdered ... 73
- Chelidonium majus ... 96
- Chemicals, medicinal ... 120
- Chemistry, agricultural ... 172
  - analytical ... 174
  - inorganic ... 130
  - organic ... 151
  - physiological ... 168
  - vegetable ... 172
- Chenopodiaceæ ... 109
- Chenopodium album ... 109
- Chilblains, remedies for ... 91
- Chlorates ... 136
- Chlorides ... 121
- Chlorine ... 136
  - with bromine, estimation 176
- Chloroform ... 127
- Chlorophyll ... 166
- Chloropicrin ... 156
- Chocolate ... 90
- Cholestearin ... 164
- Chromates ... 124, 147
- Chrome red ... 146
  - yellow ... 146
- Chromic oxide ... 146
  - salts of ... 147
- Cinchona calisaya ... 102
  - root bark ... 102
  - nitida ... 103
  - succirubra ... 103
  - in Ceylon ... 104
    - Jamaica ... 104
    - Java ... 103
  - forests in S. America ... 104
  - formation of alkaloids in ... 105
  - preparations of ... 104, 206
  - quinia in ... 105
  - valuation of ... 105
- Citrates, alkaline ... 154
- Clay, fine ... 88
- Coal tar, preservation of wood by 152
- Cocculus palmatus ... 95
- Cod-liver oil jelly ... 85
- Coffea arabica ... 105
- Colchicum autumnale ... 114
- Colchicum seed, fluid extract of ... 81
- College of Pharmacy, Chicago ... 187
  - delegate from. 47

College of Pharmacy, Chicago,
  letter from..... 46
  Cincinnati.......... 186
    delegates from 17
  Maryland........... 186
    delegates from 17
  Massachusetts..... 184
    delegates from 17
  New York.......... 185
    delegates from 28
  Philadelphia........ 185
    delegates from 17
  St. Louis............ 187
    delegates from 28
Collyria............................ 88, 289
Collyrium of Bromide of Potass... 88
  tannin.................. 88
Cologne water.......................... 78
Coloration of skin in yellow fever 170
Coloring matters......... 166
Comminution..... 280
Committee, auditing, appointed... 33
  report of.... 35
  business, appointed.. 53
  executive, report of... 19
  nominated 29
  nominating, appointed 25
  report of. 29
  on credentials.......... 17
  drug market........ 33
  report 187
  appointed 53
  membership, report of. 34
  members in arrears 41
  Progress of Pharmacy, report of. 56
  queries, report of. 54
  appointed 53
  volunteer papers appointed 49
  report of. 54
Compositæ................................ 106
Compounds, inorganic.............. 120
  organic...... 125
Confectio sennæ...................... . 85
Confections. 85, 287
Coniferæ................................. 113
Conserves of chocolate.................. 90
Constitution.............................. 321
Convolvulaceæ........................... 108
Copper, arsenic in...................... 144
  blowpipe reaction of...... 144
  bronze......................... 144
  estimation of.......... 178, 179
  non-metallic impurities in 144
  pure 144
  quadrantoxide............... 144
  quadruple salt 145
  suboxide...................... 145
  sulphate, as cauterizer... 89
  sulphite....................... 145
Coriaria myrtifolia..................... 100
  ruscifolia..................... 100
  thymifolia.................... 100
Coriariaceæ................................ 100
Cream of tartar in wines........... 180
Crocus sativus........... 113
Cruciferæ.............. 97
Cryptogamic growths................ 115
Crystals in vegetable tissues........ 173
Cucurbita pepo 101
Cucurbitaceæ............................ 101
Cyanides, test for........... 125
Cyanogen compounds...... 125

Datura stramonium.................... 108
  tatula..... 108
Decoctions.......................... 77, 285
Delegates to the twelfth annual meeting.................... 17, 28, 47
Delphinia................................ 163
Dentifrice powder................. ... 74
Desiccation 280
Dextrin.................................... 166
Dialysis.................................... 72
  application of........... ... 174
  remarks on.................. 264
Diehl, C. L., Jr., remarks on oleum æthereum.. 309
Digitalin 164
Digitalis purpurea..................... 107
Displacement............................ 283
Distillation of mixtures............. 70
Distilled waters........................ 74

Distilled waters, preservation of 75
Drugs, animal 118
  vegetable 95
Drying of adhesive substances 174

Earths 122, 176
  alkaline 122, 176
Effervescing powder 73
Election of members 18, 29
  officers 30
Electuaries of chocolate 90
Elements, non-metallic 120
Elixir of opium, McMunn's 77
Emplast. arnicæ 88
Emulsion of pumpkin-seed and male-fern 84
Enfleurage 79
Erythræa centaurium 108
Escharotics 89
Essence of mace 80
  mustard 77
Ethers 127
Euphorbiaceæ 111
Euphoria Litchi 99
Evaporation 286
Executive committee, report of 19
Exogonium purga 108
Expenses of Proceedings, 1863 20
Extracts 81, 286
  examination of 81
  from fresh herbs 81
  prepared in vacuo 81
  fluid 81, 286
Extract. jalapæ aquosum 215

Fermentation 167
Ferments 167
Ferri albuminas 123
  et magnesiæ citras 124
  et quiniæ iodid 128
    sulph 128
  et sodæ pyrophosphis 123
  sulphas 123
Fibrin, coagulation of 170
Flesh, preserved 94
Flores sulphuris 120
Fluid extracts 81, 286
Fluid extract of colchicum seed 81
Fluorescence 92
Fluorine 137
French codex, revision of 59
Frigorific mixtures 70
Fruits, respiration of 173
Fungi 115
Furnace, gas 71
Furnace, oil lamp 70

Gadus morrhua 117
Garlic, preservation of 256
Gastric liquids 169
Gentianaceæ 108
Glucose 163
  action of light on 163
  in Trommer's test 164
Glucosides 164
Glue, liquid 92
Gluten in bread 166
Glycerine for gas metres 91
  its mission, etc 237
Glycerole of bismuth 84
  borax 83
  carbolic acid 84
  chlorate of potassa 83
  oil of mustard 83
  sulphate of iron 84
  tannin 84
Goa powder 115
Gordon, W. J. M., on glycerine 237
Gossypium herbaceum 97
Gramineæ 114
Guaiacum officinale 97
Gum resins, powdered 73
  purified 102
Gun cotton, constitution of 165
  preparation of 164
  and pyroxyline paper 165
Gypsum 119

Hæmatoxylin 166
Hæmostatic 89
Harlow Car Spring 119
Heat, generation and application 285
Honey 117
Honey in pills 86

Honeys 286
Humulus lupulus 111
Hydrangea arborescens 101
Hydrarg. chlorid. corr 124
Hydrogen 133

Iberis amara 97
Indican in urine 171
Indigo, valuation of 166
Indium 140
Infusion of senna 92
Infusions 282
Insecta 117
Insurance on property of Assoc 41
Invitations 25, 40, 44, 46
Iodides 121
Iodine 120, 137
Iridaceæ 113
Iron, burning, colored by phosphorus 144
Iron, cast 143
  estimation of 178, 179
  perchloride 143
  perchloride and collodium 90
  sesquichloride, for ulcers 90
  test for 143
Isonandra gutta 107

Jellies 85
Johannesbrunn 119

Labarraque's solution 76
Lard 116
  extraction and preservation of 208
Larix 113
Lauraceæ 110
Lead in tin 145
  oxide 146
  oxychloride 146
  volumetric estimation of 177
Lead pipes 72
Leguminosæ 99
Lemonade 77
Lemon juice 76
Lichenes 115
Life members 27, 41
Lignin 164
Ligustrum vulgare 109
Lime, chlorinated 141
  hydrate of 141
  hypophosphite 141
  phosphate in intestines 170
  separation from magnesia 177
Linaceæ 97
Lincoln, H. W., on lard 208
Liniments 88, 285, 290
Linum usitatissimum 97
Liquidambar styraciflua 222
Liquor ammoniæ acetatis 76
  guttæ perchæ 75
  magnesiæ citratis 77
  potassæ permanganatis 77
Litmus 71
Lolium temulentum 114
Lotions 289
Lovage root, Japanese 102
Lozenges 85, 287
  santonin 85
    compound 85
Lycium barbarum 108

Magnesia, citrate of 77, 122
  hyposulphite 142
  separation from lime 177
  sulphite 142
Magnesium 142
  chloride of 119
Maisch, J. M., assay of French brandy and whiskey 291
  medicinal spirits 303
  quality of sherry wine 296
  report on the drug market 187
Malvaceæ 97
Mammalia 118
Manganese, black oxide 123
  estimation of 179
Manganesii sulphas 123
Manganium 143
Manufacture of oleum æthereum 306
Markoe, J. F. H., solubility of camphor in water 212
  on Pyrethrum roseum 248
Mayer, F. F., on tobacco 223
Meakim, John, obituary of 23

- Measures, graduated 72
- Meconin 160
- Medicated waters 76
- Medicinal chemicals 120
  - spirits 303
- Medicines, vegetable 279
- Meeting, 13th annual, place of 40
- Melanthaceæ 114
- Members, delinquent 27, 31
  - elected by Exec. Com. 18
  - election of 18, 29
    - in recess abolished 45
  - present at the meeting 19, 28
  - roll of 327
- Menispermaceæ 95
- Mercury, biatomic character of 150
  - estimation of 178
  - in California 150
  - recognition of 178
  - sulphide 150
- Metals, heavy 123, 177
- Metrology 279
- Minerals 118
- Mineral waters 119
  - artificial 76
  - estimation of gases in 175
- Minutes of the 12th annual meeting 17—53
- Mixture, bromine 85
  - of chloroform 84
  - Pagliari's 91
- Mixtures 84, 288, 289
  - refrigerating 70
- Molybdenum 147
- Morin 166
- Morphia 162
  - estimation of 180
  - tests for 181
- Mustang liniment 93
- Myroxylon Pareira 99
- Myrsinaceæ 107

- Naiadaceæ 113
- Napellina 95
- Narceina 163
- Narcotina, estimation of 180
- Narthex assafœtida 101
- Nerium oleander 109
- Nickel, volumetric estimation of 178
- Nicotiana tabacum 108
- Nitrobenzole 152
- Nitrogen 134
  - as a fertilizer 173
  - excretion of 170
  - protoxide 134
- Nitroglycerin 155
- Nominating committee appointed 25
- Nomination of officers 29

- Oak bark 203
- Obituaries 22
- Observations, miscellaneous 90
- Officers, election of 30
  - nomination of 29
- Oils, fixed 80
  - adulteration of 80
  - fluidity of 80
- Oil of chamomile 157
  - gaultheria 157
  - mustard 157
  - nutmegs 157
  - pennyroyal 204
  - sassafras 201
  - wormseed, Levant 158
    - Baltimore 202
  - wormwood 106
- Oils, volatile 79, 157
  - adulteration of 80
  - coloring matter 158
  - recovery of 79
  - optical properties of 158
  - detection of alcohol in 80
  - yield of 80
- Ointment of mercury 87
  - for rheumatism 87
- Ointments 87, 289
  - preparation of 87
  - preservation of 87
- Oleaceæ 109
- Oleum æthereum 309
- Olive oil, adulteration of 80
- Omissions on roll of members 33
- Orchidaceæ 113

Ornus Europæa 109
Oxycinchonia 161
Oxygen, preparation of 130
physiological action of 130
transfer of, in body 170
Ozone 130
ignition produced by 132
influence on vegetation 132
test for 132

Pagliari's mixture 91
Pancoast's styptic 89
Papaver somniferum 96
Papaveraceæ 96
Paper, antiasthmatic 90
as an analytical agent 174
Paraffin 152
Parrish, Edward, balance without weights 318
brandy substitute 257
capsicum 262
course of study 273
Paste, preservation of 91
Percolation 72, 283
Petasites officinalis 106
Petroleum 88, 119
deodorizing 151
products 151
Phalaris canariensis 114
Pharmaceutist as a merchant 216
Pharmaceutical Conference of Gr't Britain 58
Association of Buenos Ayres 59
weights 73
Pharmacy 70
course of study 273
in Germany 59
Phasianus gallus 116
Phloridzin 127
Phosphates in decoctions 77
plants 172
Phosphorus, tercyanide of 136
as a fertilizer 173
Photometric observations 174
Physostigma venenosum 99
Physostigmia 162
Pills 85, 287
of iodide of iron 85
of nitrate of silver 86
of phosphorus 86
poisonous calomel 86
Wright's Indian Vegetable 86
Pilulæ hydrargyri 86
Pinus palustris 111
Piper cubebæ 110
Piperaceæ 110
Piperina 162
Pisces 116
Pitch 152
Plants, preservation of 92
Plaster machines 231, 233
Plasters 87, 290
adhering to paper 87
breast 87
preparation and dispensing of 230
Platinum crucibles 174
Platinum metals 151
Podophyllum peltatum 95
Poisons, animal 169
Poppy capsules 96
Potassa and ammonia, chromate 147
and soda, estimation 177
chlorate 138
fluochromate 138
permanganate 77, 121
solubility of 138
Potassæ bichromas 122
carbonas 121, 122
hypophosphis 122
permanganas 121
picras 122
Potassii bromidum 121
cyanidum 121 126
ferrocyanidum 121, 125
iodidum 121
Potassium, chloride of 119
Powder, Ridgewood disinfecting 91
Powders 73
Prescriptions 287
President's Address 26
Press 249
Prickly Ash Bark, Southern 270

Prizes, suggestion of Exec. Comm. for offering 21
Prizes, suggestion of Exec. Comm. rejected 42
Proceedings, expenses of, 1863 20
 stock of 20
Processes 70
Procter, *Wm*, *Jr.*, Sweet Gum Tree 222
 Resin of Cannabis Indica 244
 Odor of commercial tannin. 255
 Remarks on dialysis 264
Propylene 155
Protein compounds 166
Protozoans 118
Prunus domestica 101
Publications in English Language, 61
 French " 64
 German " 65
Pulps of chocolate 90
Pulverization 280
Pulvis antimonialis 74
Putrefaction 167
 of wine 171
Pyrethrum carneum 106
 roseum 248
 Willemoti 106
Pyroxilin soluble in alcohol 165

Quinia and oil of anise 161
 distinguished from cinchonia 161
 external use of 129
Quiniæ sulphas 129
 tannas 129
Quinoline 160
Qualifications for membership, recommendations for 34

Ranunculaceæ 95
Ranunculus acris 95
Rennet wine 79
Report of Comm. on Membership, 34
 on volunteer papers 54
 Executive Committee 19
 Corresponding Secretary, 182
 annual, of President 26
Report of Treasurer 31
 on the drug market 187
 progress of pharmacy 56
Reports and essays, special 206
 volunteer 273
Resolution of thanks to Dr. O. M. Langdon 53
 to Larz. Anderson 53
 to Cincinnati College of Ph., 53
 to officers 53
Rhus succedanea 98
 toxicodendron 98
Ricinus communis 111
Roccella tinctoria 115
Rosa gallica 101
Rosaceæ 101
Rottlera Schimperi 111
Rubiaceæ 102
Rubidium 139
Rutaceæ 98

Salicin in urine 172
Salts absorbed by skin 172
Sanguinaria Canadensis 96
Santonin 130
Saoria picta 107
Sapotaceæ 107
Sarracenia purpurea 96
Sarraceniaceæ 96
Sassafras bark in Baltimore 201
Saxifragaceæ 101
Scattergood, *G. J.*, note on fermentation, &c. 36
 Report on the Progress of Pharmacy 56–182
Schedule of classification 69
Scientific papers read 35, 42, 47
Scrophulariaceæ 107
Sea-sickness, remedy for 92
Secretary, correspond., report of 33
Senega root 202
Sharp, *A. P.*, preservation of garlic 256
Sherry wine, quality and assay 296
Shinn, *J. T.*, bitter wine of iron. 234
Silicium 135

Silicium, alloy of 135
 compounds with oxygen and hydrogen............. 135
Silver, chloride........................ 150
 oxide...................... 150, 151
Soap, silicate of soda................. 90
Soda 139
 and potassa, estimation of... 177
 carbonate of.................. ... 118
 hyposulphate of................. 139
 nitrate of......................... 139
Sodæ chloras............................ 120
 hyposulphis........................ 121
Sodium, chloride of..................... 118
Solanaceæ. 108
Solanum pseudo-capsicum.......... 108
Solutions...................................... 75
Solution, on................................. 281
Spatulas 241
Spermœdia clavus 115
Spices, ground................. 74
Spirits............................... 77, 285
 medicinal 303
Spiritus ætheris nitrosi............... 127
 ammoniæ aromaticus 307
 lavandulæ compositus.... 308
Sponge. 118
Stabler, R. H., The Press........... 249
Standing committees, recommendation for new 22
 new created 45, 46
Starch, absorbing power of......... 160
 in unripe fruit 165
 iodine test for................. 181
 separation of, from seeds.. 180
Stearns, Fr., the pharmaceutist as a merchant......................... 216
Steel, theory of.......................... 144
Stirring rods............................. 241
Stopper for bottles 71
Strychnia, antidotes to............... 129
Styptics.. 89
Styraceæ 106
Styrax benzoin.. 106
Sugar, estimation of.................. 181
 non-polarizing................ 163
Sulphur 118, 135
Sulphur, action of, on ammonia... 136
 estimation of........... 179
Sulphurets........ 121
Sus scrofa.. 116
Sweet gum-tree........................ 222
Syllabus of course of study and manipulation..................... 279
Syrup of iron and cinchona......... 83
 Pagliano's............ 83
Syrups............................ 81
Syrupus copaibæ...................... 81
 chloroformi................... 83
 Ferri iodidi................... 82
 fuci vesiculosis 82
 lactucarii opiat............ 82
 limonis..... 82
 santonini.................. .. 82

Table of acetic acid in brandy..... 293
 whiskey... 295
 assay of sherry wine...... 300
 imports and exports at Baltimore...... 204
 reactions of volatile bases 225
 supply, &c., of drugs..... 190
 temperature and yield of oil of wine......... 310, 312
 yield of oil of wine........ 316
Taraxacum dens-leonis............... 106
Taylor, A. B., aqueous extract of jalap................ 215
 preparations of cinchona...... ... 206
Test for grease........................... 94
 liquids.......................... 94
 resin of cannabis indica.. 244
Test paper.................................. 71
Thallium........ 137
Theobroma cacao 97
Thomas, Dr. Robt. P., obituary notice.................................. 24
Thomsen, J. J., report on Baltimore drug market............... 200
Tinctura santali rubri.................. 308
Tincture of aloes..... 88
Tinctures.................... 77, 283, 284
Tobacco, on......................... 223

Tungsten 147
Tyrosina 162

Umbelliferæ 101
Uranium, estimation of 179
Urea 158
Urine 171
  gases in 172
  indican in 171
  putrefaction of 171
  salicin in 172
Urticaceæ 111

Vanadiates, test for 147
Vanadium in pig iron 147
Vanilla aromatica 113
Varnish, blue, for bottles 71
  collodion 93
Vegetable medicines 279
Ventilation, use in 132
Veratria 161
Veratrum album 114
  viride 114
Vessels, impermeable 71
Viburnum lantana 102
Vina 285
Vine in California 98
Vinegars 79
Vinum diureticum 78
Vitaceæ 98

Washes 88
Water 133
Water, action of, on lead 71
Water, boiling of 133
  purifying 133, 134
  vapor of, as disinfectant 133
  in ether and alcohol 155
Waters, analysis of sulphuretted 175
  medicated 76
  mineral 119
    artificial 76
Wax, adulteration of 117
  paper 90
Weyman, G. W., obituary notice. 23
Wiegand, T. S., balance for apothecaries 316
  on spatulas, &c 241
Whiskey, assay of 294
Wild cherry bark 202
Wine, artificially colored 79
  bitter, of iron 234
  climatology 99
  sherry, quality of 296
  vatting of 98
Wines 78, 285
  ageing of 156
Wood, preservation of 91, 152
  spirit 156
Wool, to distinguish from silk 93
Wrightia anti-dysenterica 109
Writing, indestructible 92

Zinc, estimation of 178
Zinc ethyl 156
Zinci chloridum 124
Zostera marina 113
Zygophyllaceæ 97

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